COMMENCED IN 1881.

"Step after step the ladder is ascended."—George Herbert, *Jacula Prudentum.*

THE TROPICAL AGRICULTURIST:

A MONTHLY RECORD OF INFORMATION FOR PLANTERS

OF

TEA, CACAO, COFFEE, CINCHONA, PALMS, SUGAR, COTTON, TOBACCO, SPICES, CAMPHOR, RUBBER, RICE,

AND OTHER PRODUCTS SUITED FOR CULTIVATION IN THE TROPICS.

EDITED BY

J. FERGUSON,

of the "Ceylon Observer," &c.

"It is both the duty and interest of every owner and cultivator of the soil to study the best means of rendering that soil subservient to his own and the general wants of the community; and he who introduces, beneficially, a new and useful *Seed, Plant* or *Shrub* into his district, as a blessing and an honour to his country."—SIR J. SINCLAIR.

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MDCCCXCVI.

TO OUR READERS.

In closing the Fifteenth Volume of the "Tropical Agriculturist," we would as usual direct attention to the large amount of useful information afforded and to the great variety of topics treated in the several numbers. From month to month, we have endeavoured to embody in these pages the latest results of practical experience and scientific teaching in all that concerns tropical agriculture; and our ambition has been to make our periodical not only indispensable to the planter, but of service to business men and capitalists, never forgetting that agriculture trenches upon every department of human knowledge, besides being the basis of personal and communal wealth.

While directing our attention chiefly to the products prominently mentioned on our title-page, we have always taken care to notice minor industries likely to fit in with sub-tropical conditions: and our readers have an ample guarantee in the pages before them, that, in the future, no pains will be spared to bring together all available information both from the West and East, the same being examined in the light of the teachings of common sense as well as of prolonged tropical experience in this, the leading Crown and Planting Colony of the British Empire.

Special attention has, during the past year, been given to the extension of the fibre industry (rhea, sisal, &c.), coffee and other products in Nyassaland, British Central Africa; Liberian coffee and other products in Deli, Sumatra, the Straits Settlements; and to other new developments in coffee &c. in the Malayan Peninsula and North Borneo.

The Tea-planting Industry has sprung into so much importance in India and Ceylon, that a considerable amount of space is naturally given to this great staple; and we think it will be admitted by impartial judges that the *Tropical Agriculturist* should be filed, for ready reference, in every Tea Factory in this Island and India.

A full and accurate Index affords the means of ready reference to every subject treated in this, the fifteenth volume, which we now place in our subscribers' hands, in the full confidence that it will be received with an amount of approval, at least equal to that which has been so kindly extended to its predecessors.

We are convinced that no more suitable or useful gift can be made to the tropical planter or agriculturist, whether he be about to enter on his career, or with many years of experience behind him, than the fifteen volumes of our periodical which we have now made available. They are full of information bearing on every department and relating to nearly every product within the scope of sub-tropical industries.

In conclusion, we have to tender our thanks to readers and contributors, and our wish that all friends may continue to write instructively and to read with approval; for then, indeed, must the "Tropical Agriculturist" continue to do well.

J. FERGUSON.

Colombo, Ceylon; 1st July 1896.

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FLOWER-FARMING IN AUSTRALIA.

WHAT AUSTRALIAN FARMERS, MANUFACTURING CHEMISTS AND HORTICULTURISTS ARE DOING IN THIS DIRECTION.—A LUCRATIVE INDUSTRY.—LITTLE OUTLAY AND QUICK RETURNS.

(By W. Lodian, Melbourne.)

THE present paper is intended only as an introduction to the subject,—to afford a brief view of the art of perfumery-making. It would be impossible to do otherwise in a short 'complote' article like this. Scent-making already has a big standard literature and all who wish for more information, will get a surfeit of it in any public Library.

Our own people require such information on this subject. Why should we not produce our own perfumery?

'It is easier to make perfumery than make butter,' has often been written, but this fact is little known. Very trifling capital is required; the seeds or graftings are supplied free to Australian citizens by the Government experiment flower-farm at Dunolly, with printed instructions; and a lot of literature on the subject can be had on application to the Department of Agriculture, Melbourne.

A FEW PERFUMERY 'PAINTERS':

Never grow plots of flowers too close together. Reason: If you group various kinds of scent plants too close to each oth r—as lavender and pennyroyal next door—each one will become tainted one with the other, and the virgin aroma of each will be confused, and the distilling will not improve them. An acre of roses or jasmine, for instance, should be separated by, say, an acre of potatoes or cabbages, or whatever you like to grow in the way of edibles.

The plants are all arranged in rows running due North and South, so as to get the greatest and longest benefit from the sunshine. On the influence of the sun, consists, in a large way, the superiority of the oil extracted.

For every perfume, a separate still is not entirely required, as by a simple dose of sulphuric or oil of vitriol (1 part to 20 of water,) the still is properly cleansed. A 20-gallon still costs £5; one of 50-gallons, £30; and one of 300 gallons, £80. To begin with, a flower grower in a small way finds a 20-gallon still ample.

What flowers does it pay best to grow? The answer is: Boronia (the native perfume plant of Australia) tube-rose, jonquil, acacia, rose, jasmine, orange-blossom, lavender and peppermint. All now command a market both at home and abroad.

As you go along, read up all the modern literature concerning perfumery.

HOW THE DISTILLING IS DONE:

The spaco below the falls bottom of the still is occupied by water, and a few pounds of salt or alum is dissolved therein to increase its boiling-point. The tank is now fiilled with the desired flowers, and the funnel-shaped steam-lid is held in place by being screwed down and the crevice packed round with clay just damp. A quick fire is ignited under the still, causing vapour, which, percolating through the flowers laying in the falls bottom, releases the attar; and steam and oil go jointly up the funnel and wind their way through the condensing corkscrew-shaped pipe. A stream of cold water running into the tub (or ice could be used) helps to condense the steam and oil, which flow into a glass jug or vase. The oil is seen floating on the top, and is skinned off by a spatula or black ivory paper-knife,—or sucked off the water by a pipette (glass pipe),—a crystal tube having a bulb about three inches from one extremity. The distiller places one end in his mouth and, lightly touching the little floating filaments of essential with the other, draws them into the bulb.

If the identical distilled water is employed several times over, it increases the output of oil. The temperature of the steam must not be too great, or the essential oil is liable to be injured. Time: about three hours. The falls bottom containing the stewed leaves is hoisted out and the mashed mass is used as a fertiliser.

SOME OF THE ELEMENTS OF SUCCESS:

When laying out a flower farm for the manufacture of perfumery, it must be borne in mind that one important *rôle* to financial success is the means to obtain low-priced labor,—such as women's and children's help, who can do the work quite as well as the higher-priced male. It would not do at all to pay 5s. to 6s. a day to men to collect roses or jasmine flowers. It is also an error to attempt to cultivate too many species of perfume flowers. Select only those which are peculiarly suited to your earth and position, and adapted to affairs climatological. A well-established truth it is that these conditions enhance considerably the value of the outputs of various flowers.

No: it won't pay in flower-farming to employ the labor of men (except in the more technical features) when boy and girl labor can be utilised and the work done just as well. One of the open secrets of the success of the Southern French is that they have always utilised the labor of the young—and even old women—in picking flowers, because they do it quicker and better and cheaper than men.

Make flower-growing serve your ends by using it as a staff,—not as a crutch. Thus,—never entirely rely upon it for a living. Run it along with something else. If you have a family of children whose work you can have, you are pretty certain to be successful.

WHAT IT DOES NOT PAY TO CULTIVATE:

The perfume-making business of the present time is not what it was like in times gone by, and this data about it in different encyclopædias is almost quite out-of-date. The progress of the science of chemistry has been so quick in recent years, that many aromas hitherto taken from flowers, are now manufactured by chemical combinations and adulterations, by manufacturing druggists. Examples: the fragrance of the simple violet, and its notable modest odor, is now gotten by chemical process. Attempts have even been made to obtain it from the urine of diabetic patients. The flower heliotrope has lost its fame as a commercial perfume plant: chemists have learned how to turn out from other sources an artificial article which is an exact substitute,—the product quite surpassing—it is given out (in quality, consistency, and likeability, to the real thing of nature)—the odor forced from the flower itself. Even the household lilac has not been permitted to retain the exclusive privilege of its aroma-breathing characteristics; for the man of the pestle and mortar obtains its chemicals,—chiefly these artificial scents are obtained, synthetically, from vefrica coal-tar. Don't be alarmed by the progress of science. Many secrets there are, which chemists cannot imitate.

PROCESSES EXTRACTION:

Besides distilling, there are four methods for extracting scents from flowers. They are: expression, maceration, absorption, and the methyl-chloride process. Expression is only adopted where the substance treated is very liberal in its native or essential oil, such as the peel of the orange or citron. By maceration is meant the placing of the flowers in fat made liquid (just warm); allowed to remain therein about three days (no need to keep it warm), and then warmed sufficiently to allow the fat to drain from the exhausted flowers, and, after squeezing out what fat remains with these, they are thrown on to the fertilising heap. Fresh flowers are added to the fat (the absorbing qualities of which are well-known), and after 8 or 9 such changes, the fat is found sufficiently perfumed. It is then treated with alcohol, and yields its perfume to that agent, which becomes the perfume article of commerce. The fat, if properly cleaned, can be used over and over again. The heat of maceration, however, is rather injurious to the delicacy of the perfume.

The absorption process (usually known by the French name of *enfleurage*) consists in the flowers being laid on frames of cold fat, which is subsequently treated as in maceration. Cotton rags soaked in olive oil are also used, then the oil squeezed out and treated. The methyl-chloride process is a chemical treatment to be best studied in text-books and considered;—the distillation process is best,—but study all the law before building a still.

ATTAR OF ROSES.

Nature has many flowers. Gold is heavy, but roses are not, yet the essential oil of roses is worth more than gold—weight for weight. Of all botanical growths, the otto (same as attar) of roses finds the readiest market. It is always in demand. Like the most precious of auriferous metals,—too much cannot be obtained. In a fairly prosperous year, 300 pounds' weight of roses will yield 1 ounce of attar, or oil, and a lot of fragrant and saleable rose-water. The petals are placed in a still, the vapor volatises the attar, and both steam and oil ascend, wind their way through the spiral condenser, and pass out of the other extremity into the receving base.

The correct kinds of rose to grow are the centifolia, or chou, rose (rarely seen Antipodes-wards), and the rose of France,—also called rose de Grasse after the celebrated flower and perfume-producing region of France,—a place twice visited by the present writer, in 1891 and 1892. An acre of land under first-class cultivation will yield at least 1,500 pounds of rose-petals; and this will give 5 ounces of attar, worth from 35s. to 47s. each ounce; and there will also be some 100 gallons of rose-water, valued at 3s. to 4s. per gallon.

The roses are best put into the still while quite fresh and crisp—the gathering taking place in the morning after the dew has disappeared. If it is desired to keep them 24 hours before use, sprinklet them with fine salt, to retain their fragrance.

WHAT THE PERFUME STILL IS LIKE:

This is a very simple arrangement. Any intelligent person—whether a mechanic or not—can construct one with the partial aid of a blacksmith. A roughly-made, plant consists as follows: A metallic tank of about 100 gallons' capacity, the interior fixed with a holed false bottom about 9 inches from the base, and set in brickwork (although this is not absolutely necessary), with a fire-retort under. A funnel about 1 foot diam., at its greatest extent, with a river to enter and a flange to support it, is fitted like a saucepan-lid over a similar hole in the head of the tank. A pipe of 2 inches diam., a continuation of the funnel, continues like a spiral worm around the interior woodwork of a barrel filled with cold water,—the end emanating near the base, like a faucet. Thus the apparatus is complete.

Steaming or distillation of flowers is the method employed in the fabrication of neroli, rose, lavender, etc., oils; also of various other growths. The work of distilling is quite simple; and never necessitates any great degree of experience,—*i.e.*, the fat and the oil methods,—both quite easy to learn.

But the greatest art in perfumery consists in adulteration,—the knowledge how to blend cheap with valuable essentials. It requires years of learning, and is a professional secret. Like painting, it is not easily learnt. But the grower does not need these secrets. Those are for the manufacturing chemist.

SOME RESULTS PER ACRE:

The bitter-orange blossom will yield 80 oz., of essential oil per acre, which at 15s., to £1 per oz., means £60 to £80 per acre. The acre of jasmine will bring in £20 to £30. Roses from £70 to £90 per acre (the attar is exceedingly limited, or probably the sum per acre would be higher). The oz., is worth from £2 to £3. even the prolific oil-producing true lavender, brings 60s., por pound. Peppermint yields up to 30 pounds of oil per acre, which at 30s., per pound, means a return of £45 per acre. And so on with the other essential oils, all of which are most valuable. Compare the figures, ye struggling farmers, with your present low returns for growing corn or market produce. Study the

perfume market, form rings for keeping up prices, and place your trust in—roses, the attar of which is never likely to be over-produced.

A FEW FIGURES ABOUT OTHER COUNTRIES:

Last year in France, Grasse district alone produced 2,000 tons of orange blossoms, 1,500 tons of roses, 220 tons violets (cheap labor and abundance defies chemical competition,) 200 tons jasmine, 88 tons tube-rose, 38 tons jonquil, 33 tons acacia, 22 tons mignonet. One factory there, by itself uses 50 tons acacia (buying up the flowers from neighbouring regions,) 70 tons roses, 16 tons jasmine and 10 tons tube-rose. There are 50 distillations in Grasse (a town of 11,000) some employing 200 han's in season.

A TOUR THROUGH NORTH AND SOUTH WYNAAD.

A GLORIOUS COUNTRY—ABANDONED COFFEE—HEAVY YIELD—TEA CULTIVATION—OPENING FOR CEYLON MEN—SPORTS TO BE HAD.

Probably a few notes from this glorious country will interest some of the friends I have left in your little island, which, with its many charms, cannot be compared with this luxuriantly productive land of Southern India. It seems to me extraordinary that the planters of Ceylon should emigrate to the distant Straits and even to Africa for "pastures new," owing to its over-population in the matter of planting. There, when a prolific country like this adjoins the Island!

I started from the Kasselas estate for Manantoddy (about 5 miles distant) at 5 o'clock a. m. *en route* to Vythery, not long ago, passing many acres of abandoned coffee-land abandoned in 1867 through the collapse of the cotton market, most of the then owners of the estat's being Bombay merchants, who were more heavily involved in "cotton" than "coffee"; consequently the latter had to give way to the former. It is a sad sight to see poor "King Coffee," planted 25 years ago, or more, struggling (yet cropping) through the heavy luxuriant overgrowth of secondary jungle and lantana. Out of the many estates that once flourished and used to yield 15 cwt. per acre (and special ones over a ton) there are only two left in Manantoddy, viz., the "Brummagherries" and the Kasselas. The former is situated on the borders of Coorg, and, from what I saw of it, it promises to keep "King Coffee" to the fore, through it suffers severely from "borer." On the Kasselas estate, which is out of the range of this terrible scourge, I saw coffee that takes one back to the good old times of '72, some of the fields even outshining those palmy days of a ton per acre. On one occasion, during a morning stroll with my wife on the Kasselas estate, I stripped a lovely coffee tree to prove what a *good* one could do in the matter of yield. We were both delighted and surprised at the result—a little over *six Mysore seers* !!! Taking 28 Mysore seers to a bushel, I leave it to your readers to work out the result per acre, planted 6×6, as such trees could not possibly grow closer. It may have been an exceptional one, but it had not been pruned or cultivated for years, though topped and kept free of "suckers"; it, however, grew out of the stone foundation of a set of old coolies' lines, and had been picked over once before I stripped and measured the result.

Manantoddy—which I reached about 7 a.m.—is an exceedingly nice little town, possessing a club, hospital, travellers' bungalow, post office, two churches—a charmingly laid out burial-ground, the prettiest I have seen for a long time—golf links, and a boating club, a European private medical practitioner, and shops—in fact has everything as convenient as at Nuwara Eliya. The climate also is delightful, but *one* thing it lacks (and in a worldly sense it is *very* much "*the* one thing needful") and that is money! Everything is almost in a stage of stagnation for want of it, and were it not for Messrs. Arbuthnot & Co. of Madras, and an old resident planter, coffee in this district would be extinct. But its capabilities are second to none in the world, as far as planting is concerned, *Anything*, I firmly believe, wou'd wrow and flourish in such a fertile district. I must not forget to say I had the pleasure, too, of shooting 18 and a half couple of snipe as I strolled along. I started the following morning for Vythery, passing through magnificent land—thousands of acres of both "virgin forest" and bamboo land, and not an acre of which, if planted with tea, could, with such excellent soil and climate, produce less than 1,200 lbs. per acre, which would fetch from 8d. to 1s. per lb. if only proper jat and decent elevations were brought into force. Before reaching the hospitable abode of Perengodda estate, the proprietor of which took me over the Belliapara estate, I saw there tea trees over 30 feet high and 4 feet in circumference. (Indigenous Assam.)

These, though utterly abandoned and struggling to grow in heavy secondary jungle, were in a most healthy and luxuriant condition, and seeding freely. I also saw a clearing of about 10 acres from the progeny of these trees, only 2 years old, which would make the heart of any Ceylon planter rejoice!

I believe Wynaad consists of about sixteen hundred square mil s. I have in my time travelled from the Neilgherries, Mysore, and the Coorg Frontier through the whole of Wynaad, which consists of three distinct districts, hundreds of miles apart, viz.: *North*, which consists of Manantoddy, Dindimul, Brummagherries, and Keria. *South*,—Vythery, Culputty, Sultan's Battery, Maypadie, Cherambody, and Terriote, (these can boast of a "Public Hall," Race Course, Post, Telegraph, Police, and Civil Offices, as well as a fine Hospital). *South East*.—Goodalur, Davalah, and Pundalur—not a district of which would not grow and produce far better coffee, tea, cocoa, or any other produce that "the spicy little Island" can, if run with a little capital.

The "Pelrendotty" tea estate is the only one making an apology for tea in the South, but the method adopted here, both of the cultivation and manufacture of the leaf, is so very primitive, that it cannot honestly be held as a criterion of what Wynaad *could* produce in the way of the "cup that cheers but not inebriates!" I believe the average yield of this estate is about 900 lb. per acre, but, when one takes into consideration that every acre has from 50 to 60 per cent. failures, twelve to fifteen hundred lb. per acre is honestly nearer the mark of what it should do, and this without manure, proper pruning, or plucking. The so-called "Factory" of the estate is an old cramped shed, that no one in Ceylon would dream of utilising for anything but a tool store. It has only within the last few months gone in for a "Sirocco," and three second-hand "Little Giants," and these must evidently have been the first three manufactured after the invention of the "Roller." The place is perfectly innocent of any other machinery, not even a roll-breaker. Sifting by hand, and sorting and packing, are all done in the same cramped room, and all at one and the same time as the process of rolling, fermenting, and firing are going on; and yet it seems a marvel to some people that this estate's tea only fetches 4½d. per lb. ! ! !

However, the Panora Company are now going in for tea in a practical manner, and it does its manager credit for the way in which he has opened and planted up about 200 acres (and still extending). This is about two years' growth, and its luxuriance is simply marvellous, and is only beaten by the Cootacovil estate belonging to the Wynaad Tea Company, where they have a field of tea of the same age. On Panora I met an old Ceylon planter who has just taken up the berth of tea-maker, and on his first entering the clearing he was so struck with its wonderful growth that he could scarcely gasp forth the expression "magnificent!" "wonderful!!" "is this not a dream?" !!! He is so charmed by what he has seen that he intends to open for himself next season what is left in the south. Land can be had both in north and south Wynaad at from R20 to R50 per acre, every inch of which surpasses the best land in Ceylon, and all sorts of climates similar to Kandapolla and other places;

and its principal advantage is that it has a winter! Besides all Wynaad's many advantages it affords "Jack" good sport and so saves his being the proverbial "dull boy" that only work might make him! It has game and fowl of all descriptions, and the "Brummagherries" is the most charming spot in addition to its sporting advantages.—A.—Local "Times"

PRODUCTS OLD AND NEW IN THE NIGER COAST, WEST AFRICA.

(*By Mr. Billington, Curator, Botanic Station.*)

Almost the whole country round Old Calabar could be profitably planted with coffee, and much of it with cocoa. The Liberian coffee thrives wonderfully well even with little attention. There are upwards of 200 plants in two different places in the gardens that are flourishing. Cocoa also thrives and is shipped in small quantites, and fetches a fair price on the market.

There is much original forest soil upon which the best cocoa can be grown, especially that around the springs.

The plants of both were most of them transplanted from nursery beds in July, and there have been few failures, a fact that speaks well for their future. The transplantation of cocoa in this country is generally attended with a certain amount of risk. I therefore recommend for the native culture, where rough-and-ready methods are usual, to plant two or three seeds in an 18-inch hole at 12 feet apart, in lines.

If fresh seeds are planted in May or June, one may rely on almost all germinating. The best plant is left, and the others can be either transplanted with care, or pulled up, when the remaining plant will go ahead without a check.

The same procedure does not apply to coffee, which is best to be planted in nusery beds. The ones I transplanted are now larger than those in the nursery, and amongst the 200 that were planted in permanent places, there are no vacancies.

There is, however, a point upon which these important plants may fail eventually to justify the high expectations that are required of them, namely, whether there is sufficient depth of soil above the clay strata for the plants after reaching a certain age. It is my opinion that they *will* thrive at every stage.

Tea (Camellia theifera).—There are not enough plants, nor has there been time enough for me to express any opinion as to its future, beyond that the two small specimens that are in the gardens are growing fairly at present.

Arrow-root (Maranta arundinacea) and *Turmeric* (Curcuma longa) the soil is suited for, and both thrive well with an excellent yield. The former should prove profitable.

Ginger grows fairly, with a small yield, but occasions a good deal of trouble.

Kola Nut (Cola acuminata), being indigenous, is naturally flourishing. I recommend its cultivation.

Rubber Trees grow well with little attention, the soil and climate being especially suited for Ficus elastica and *Ceara Rubber* (Manihot Glaziovii). Both of these will in the course of time prove profitable, although some while must necessarily elapse before they can be started in quantity. The specimens in the gardens are in fine condition.

Landolphia Vines I have not experimented with, as they are indigenous, and will not grow in the open country.

Annatto Dye Plant (Bixa Orellana) flourishes almost without attention. It is to be regretted that there is not a larger demand for the pulp. If cultivated on a large scale, no market would be found for it.

Henna (Lawsonia alba), with its sweet-smelling flowers, is doing well.

Spices and Aromatics.—Cinnamon, pimento and Melegueta pepper have all made good growth. The first named, I feel confident, will be a success, and worth cultivating on a large scale. Plants raised from seeds, planted by myself in July, are now 3 feet high.

Black Pepper (Piper nigrum) I am afraid, judging by the present condition of the plants, will not thrive.

Capsicums give a fair crop of large fruit-pods. A fair-sized variety is grown by the natives, which, if it were only cultivated on a large scale, should prove profitable. Many tons are exported from other parts of the coast.

Nutmegs (Myristica fragrans), which arrived in bad condition, died soon after being planted out. I can therefore express no opinion as to how this valuable tree would grow.

Bay Tree (Laurus nobilis) and *Camphor* (Cinnamomum Camphora) have done well from the first. The latter can be recommended.

Oil seeds, Castor Oil (Ricinus communis).—Some exceedingly fine specimens have been grown, having a fair yield of seed. It is cultivated in small quantities by the natives, and is well worth attention. The same applies to ground-nuts (Arachis hypogæa). Jatropha Curcas, the physic nut, that will grow almost wild, may be mentioned; and cotton-seeds might prove profitable, as well as the croton-oil plant, which, I think, would grow.

Cotton (Gossypium sp.), although growing robustly, has an inferior staple of fibre, and I cannot recommend its cultivation except as an oil seed.

Coco Nuts thrive, but the distance from the sea will make itself felt when it comes to the question of yield. They would be, however, worth the natives' while to cultivate on a large scale.

Fruits.—The following are growing well, many of which have been raised from seeds in the gardens:—Mango, bread fruit, orange, lime, shaddock, guava, date, loquat, cherimoyer, custard apple, sweet sop, sour sop, rose apple (Eugenia Jambos), Avocado pear, akee (Blighia sapida), durian (Durio Zibethinus), banana, plantain, pine-apple, papaw, granadilla, cashew.

Such products as these, though of no actual commercial value, with the exception of the pine-apple, the distance from England being too great for exportation, are of considerable use and benefit to the country itself.

Timber.—Logwood, the specimen in the Gardens, has grown 8 feet in nine months. When once it seeds, the seeds being winged and carried about by the wind, more are propagated without attention.

Fibre Plants (Sansevieria guineensis), which can be planted almost everywhere, promise well. Pineapple, the leaves are long, and might be produced in any quantity. I have tried without success to obtain seeds of the Sisal hemp and China grass, both of which would grow in Old Calabar, as would many other useful fibres.

Eucalyptus.—The climate seems unsuited for. After many experiments I have only succeeded in raising a few small and struggling specimens of *E. citriodora*. It is possible that if they get past a certain stage they will improve.

(*From Report on the Botany of the Ndiani, Akpayafe, and Akwa Rivers District.*)

In the natural products of the whole district I am disappointed.

Rubber.—Rubber does not exist in the quantity I expected to find it, and it appears to me to be worked to its full extent, except that a more scientific method of extraction would increase the quantity. It was the exception to see any large vines that were not tapped. The district in which most vines were seen was round Okuri and Ndebiji. The natives make the unfortunate mistake of cutting down the vines, not tapping them. The result is that the vine dies. There is one species of Carpodinus, yielding an inferior rubbor; but they do not work it. A few rubber trees (*Ficus Vogelii*) are growing in the towns, but not in sufficient quantity to be worth while collecting.

The wine palm (*Raphia vinifera*), from which the piassava fibre is obtained, is found plentifully almost throughout the whole journey, but more especially about the Akwa River, Ndegha, Ndebiji, and Ekoi Afanya. The natives do not appear to use it at all. Taking into account the large number of these palms, it is surprising to find how little palm wine there was in the different villages.

Oil-yielding Plants.—Palm oil is one of the principal articles of trade at most places, but in the Dibiyanga, Munimba, and Ituka district very few oil palms are seen. The forest is very dense in these parts, which will account for their scarcity. From Ndebiji to the Akwa River they are fairly plentiful, in fact, some nuts seen near Okorora were the finest I have ever come across.

A tree, which is called by the natives "Inoi," which is also fairly common, yields from its seeds a very fine limpid oil that they use for anointing themselves and for food. It is doubtful if there is sufficient quantity to be worth collecting.

ARGON, NITROGEN, AND PLANTS.

The announcement that Lord Rayleigh and Professor Ramsay have succeedeed in proving that there exists in the atmosphere a gas which had hitherto been unsuspected, is of great interest, not only to chemists and physicists, but also to botanists. Very soon after the discovery of argon, the question was raised, "Do plants assimilate argon?" and Professor Ramsay elaborated a series of experiments, to find out if he could throw some light on a subject which is naturally interesting to botanical workers. The first thing, of course, was to find out whether there was any argon in a nitrogenous vegetable, so Professor Ramsay set to work to see if he could discover argon in nitrogenous vegetables and animal tissues. Peas and dead mice were desiccated, and then treated by Dumas' method for extracting nitrogen. This consists of mixing the powdered mice or Peas with copper oxide and lead chromate in a heated tube, whereby all the hydrogen, oxygen, carbon, sulphur, &c., are removed, and the nitrogen is collected. This, of course, was acting on the assumption that the process which liberates nitrogen also liberates argon, and this is by no means certain; in fact, Professor Ramsy, by Dumas' method, failed—so it is understood—to discover argon either in Peas or in mice.

It may be, of course, that the method employed is at fault, and that some new arrangement will have to be employed to induce this very inert gaseous constituent of the atmosphere to show its presence, or it may be that plants are quite unable to assimilate even a particle of the argon which is to be found floating in the atmosphere.

But it is to be hoped that further experiments on this subject will be made, for the relation of the atmosphere to plant life is a very important one. Since the classic experiments of Priestly and others towards the close of the last century, many researches of a laborious character have been made to find out the percentage in the air of the gasses of which our atmosphere is composed. We do not know yet whether argon is an element, or a mixture of elements. If it is a single element, its atomic weight must be about 40, and in that case no place is ready for it in Mendeleeff's table of the elements. The simplest way out of the difficulty would be to suppose that argon is a mixture, but there is conflicting evidence as to this. Mr. Crookes, with his spectroscope, says one thing; M. Olszewski, with his low-temperature thermometer, says another.

Plants, we know, do not possess the power of absorbing, or, at least, of assimilating, the free oxygen and hydrogen gasses; in all probability, argon does not enter into their composition. But experiments might be made in growing suitable plants in an atmosphere of pure argon or argon mixed with pure oxygen, on a bed of pure sand. It will be remembered that it was with such experiments that Hellriegel and Wilfarth in Germany conclusively proved that free nitrogen was fixed by leguminous plants in symbiosis with microbes, as well as by mixtures of the lower organisms inhabiting soils, green algæ, and microbes.

The chemical history of the atmosphere, from its origin to the present day, has attracted the attention of many observers. Koene and Stas in Brussels, and Dr. T. L. Phipson in England, have all brought forward theories. Briefly stated, they amount to this. The primitive atmosphere was composed of nitrogen, the substance which has the least tendency to combine directly with others. Into this atmosphere volcanic action evolved large quantities of carbonic acid and water. There was no free oxygen in this primitive atmosphere, but it was in this primitive atmosphere of nitrogen, with more or less carbonic acid and vapour, that the first organised beings (i.e., plants) made their appearance; experiments have shown that many plants of our own day can vegetate in an atmosphere of this kind, in which animal life is quite impossible. In fact, according to these physicists, all the oxygen now existing in the earth's atmosphere is due to vegetation extending over immense periods of time. It is generally allowed that the function of nitrogen in the atmosphere is to dilute the oxygen, which would otherwise be too strong for human beings. How argon will combine with all these theories remains to be seen. —H. C. F.—*Gardeners' Chronicle.*

THE TREATMENT OF THE SOIL IN LIME PLANTATIONS.

(*By F. Watts, F. I. C., Assoc. Mason College, Govt, Chemist, Antigua.*)

The question of the application of manures to fruit trees is one which is sure to require consideration sooner or later in all districts where large orchards are established; and as little has been written on the subject in relation to Lime trees the following notes may prove acceptable to those interested in the Lime industry.

In considering the question of manuring this or any other crop, it is of essential importance that the mechanical condition or heart of the soil should first of all receive attention. Unfortunately this condition or heart includes a number of physical factors which do not readily admit of representation by figures, such as friability, porosity, aeration, water holding power and many others, though these points are readily recognised by the practised eye and hand. It is to the maintenance of this condition or heart that the principal operations of tillage are directed. The roots of a Lime tree like all others must be supplied with air as well as moisture; they will not penetrate badly-drained soils to any considerable depth, and under these conditions suffer from shallowness of the available soil, the impervious subsoil being of little more use to the tree than impenetrable rock. From the character of the Lime crop and its cultivation there is a decided tendency for the soil of Lime orchards to fall off in condition, particularly where the soil is of a clayey character, and this danger is increased when the orchard is made to serve also as a pasture for stock; the trampling of the animals, especially in wet weather, hardens the soil, reduces its porosity and prevents the free spreading of the roots of the Lime trees.

The necessary aeration of this soil, could be readily secured by growing some intermediate crop between the Lime trees, either with the idea of making this intermediate crop remunerative in itself, or of turning in the resulting growth as a green dressing. In the first case careful attention must be paid to the manuring in order that the removal of double crops may not unduly impoverish the soil; but if reasonable care be taken various crops may be raised and the soil left in an improved condition at the end of a given period; such crops as corn, potatoes, yams, and arrowroot lend themselves to this form of cultivation and might be grown with advantage in newly-planted Lime orchards, for the space of several years. Situated as some Lime orchards are, it is sometimes difficult to find a market for the produce grown in this manner In such cases the cultivation of intermediate crops for green dressings commends itself, and for this purpose nothing surpasses the pigeon pea in ultility. It is now well known that plants of the Bean or Pea tribe possess the remarkable power of assimilating the nitrogen of the atmosphere—a power which other plants do not possess. In consequence of this beans and peas are able to thrive in soils so poor in nitrogen that other plants could grow in them with

difficulty. On ploughing a pea crop into the soil on which it grew most substantial gain accrues, for not only is the mineral matter of the crop returned in a form readily assimilable by subsequent crops, and large stores of vegetable matter which have their origin in the atmosphere and on decaying form valuable humus are added to the soil, but in addition, considerable quantities of nitrogen (a costly constituent of manures) are brought into the soil, this nitrogen having been derived from the atmosphere whence other crops are unable to extract it. A soil thus treated is considerably enriched while its mechanical condition or heart is improved.

The mechanical action of the roots of intermediate crops, leguminous and others, must be of considerable service in improving stiff soils; for when the growing crop dies, or is reaped, the roots which have penetrated to various depths decay, and leaving channels in the stiff subsoil, admit air, and encourage the downward tendency of the roots of the Lime trees. I cannot lay too great stress on the importance of maintaining the soil in good condition, for I have seen orchards where the trees have been in a dying condition from starvation, while the soil itself contained a superabundance of plant food, but in an unavailable state. In such a case a thorough tilling followed by a green dressing, would have been attended with excellent results while the application of manures would have proved useless.

Having secured good tilth with a soil in "good heart" a condition which involves the presence of a fair supply of humus, it becomes necessary to inquire what items of plant food a Lime crop will remove from the soil and whether it will be necessary to provide for the restoration of any constituent likely to prove deficient.

From analyses which I made some time ago, I obtained the following information bearing directly on this side of the question.

Ripe Limes contain about ·35 to ·40 per cent of mineral constituents having the following composition.

Composition of Ash per Cent.		Pounds of Each Constituent in 1000 lb. of Fruit
Potash	47·21	1·888
Soda	1·68	·067
Lime	29·17	1·167
Magnesia	6·73	·270
Oxide of Iron	1·02	·041
Phosphoric Acid ..	11·46	·458
Sulphuric Acid ..	·26	·011
Chlorine	1·84	·073
Silica	1·03	·041
	100·40	
deduct O = Cl. ..	·41	
	99·99	

Now the yield of fruit from an acre of Lime orchard varies very much, but for purposes of calculation we may take the quantity at from 50 to 100 barrels of fruit per acre, per annum, when in full bearing, or about from 10,000 to 20,000 lb.

A glance will show that so far as the mineral matter is concerned the heaviest demands will fall on the potash, the lime and the phosphoric acid, and that the amounts removed by a crop of lime annually will be about as follows:—

Potash	... ...	19 to 38 lb.
Lime	... ...	12 to 24 lb.
Phosphoric Acid	...	9 to 18 lb,

These will be the amounts per acre abstracted from the soil when the fruit is entirely taken away from the orchards; but in most cases the skins and pulp of the fruit, after the juice has been expressed, are returned to the soil, and thus, will reduce the demands on the plant food of the soil to about one half.

Bearing these facts in mind, it becomes comparatively easy to calculate what amount of various manurial constituents should be applied in order to maintain unimpaired the fertility of the soil.

So far as I am aware the volcanic soils of the West Indies on which the Lime orchards are situated are for the most part very deficient in lime and in phosphoric acid. Of the lime which is present, a very large proportion is present in a form which is of very little immediate value, being chiefly silicate, while the available *carbonate* of lime is usually present in very small quantities; and as this plays a very important part in the chemistry of the soil, in aiding the transformation of nitrogenous substances into nitrates, in which form Plants assimulate their nitrogen, it is desirable to add lime to these soils, if possible to do so at a reasonable cost. The deficiency of phosphoric acid is readily made up by the application of various phosphatic manures, As many soils are so deficient in free lime it would seem desirable to avoid the use of acid preparations of phosphoric acid such as superphosphate and to employ instead such substances as bone dust, precipitated phosphate, or basic phosphate otherwise known as Thomas phosphate. These are slow acting manures whose effect should be apparent over a considerable period, a point of some value in manuring fruit trees.

These volcanic soils, although containing moderate amounts of potash, are not over stocked with that constituent in an easily assimilable form, hence it is desirable to add small quantities of potash when applying phosphatic and other manures. If an intermediate crop is grown and removed as has been suggested above, then the application of potash becomes of paramount importance, such crops as potatoes or arrowroot take large amounts of potash from the soil and their exhausting effects would soon be felt unless this contituent was replaced by artificial manuring.

As to the nitrogenous manuring of lime trees we have little to guide us in the way of chmical literature on the subject. Experiments show that the appearance of the trees is greatly improved by the application of nitrogenous manures, and it would seem that general health and fertility should be increased in like manner. The growth of green dressings of pigeon peas as described above, coupled with the application of the pen manure from the animals employed in working a Lime estate, will probably constitute the chief sources of nitrogenous food supply. Should artificial manures be purchased, such substances as dried blood or cotton seed cake or other seed cakes, being somewhat slow in their action and lasting in their effect, are preferable for the purposes of fruit farming to such soluble forms of nitrogenous manure as Sulphate of Ammonia or Nitrate of Soda

The other constituents of the soil are present in sufficient quantities in those orchards which I have had an opportunity of examining, and it would seem therefore that, having got the soils of a Lime orchard into good mechanical condition, Nitrogen, Phosphoric acid, Lime and potash are the only manurial constituents requiring much thought.

THE MANGROVE CONCESSION.

In our last number we informed our readers that a concession had been granted for the purpose of extracting tannic acid from tho bark of the Mangrove, of which there aro six species found in Ceylon, namely:—

Rhizophero mucronata,	S., Kadol;	T.,	Kandal.
candolario,	S., Kadol;	T.,	Kandal.
Ceriops candolleana	—	T.,	Chirukandal.
" Roxburghiana	—		—
Bruguiera gymnorhiza	—	T.,	Kandal.
" caryophylloides	—		—

To obtain the bark two systems are in vogue. In Borneo the trees themselves are felled, and then the bark is stripped, while in Ceylon the bark is, as a rule, roughly stripped off and the tree is left standing, but it is often so damaged that it eventually dies. It has been pointed out to us that there might be a better way than either of these two methods, and this would be to spokeshave the trees as was done with Cinchona. Can any of our readers inform

us if the Mangrove renews its bark readily after being shaved. Should this be the case, it would be interesting to know whether the renewed Mangrove bark would give a larger amount of tannic acid, just as renewed cinchona bark gave a much better analysis than the original bark. The advantages of shaving off the bark are manifest, for the tree will not get killed in the process, and would probably give another harvest of bark within the year, and along river banks the cutting down of large quantities of Mangroves, which keep up the bank of the river and stop denudation, might cause a considerable alteration in the course of the river.—*Ceylon Forester*

MADRAS SEASON REPORTS.

For the purpose of Weekly Season Reports the Board of Revenue has directed Collectors to adopt the following adjectives in describing the yield of crops:—20 annas=a bumper crop; 16 annas=average; 10 annas=fair; 8 annas=middling: and 4 annas=bad.

THE SEASON ON THE WEST COAST.—A correspondent writes:—The unusual manner in which the south-west monsoon is holding off this year is causing much uneasiness and apprehension, owing to the exceptional drought this year, wailing comes up from all parts of the district that water is becoming very scarce and crops are beginning to wither up. In many localities, the *modan* and *chama* dry crops have, it is said, entirely withered up, while almost a similar fate is said to be awaiting field-sown paddy, not a few cultivators even complaining that the very seed has been parched up beyond recovery. Even the outturn of coconuts is affected. In Calicut, the heat is intense; several wells have almost totally dried up, and even the Big Tank which supplies the Europeans and several others with good drinking water has gone down to a very low water level.—*Madras Mail* June 8.

VARIOUS PLANTING NOTES.

THE ACTION OF GLYCERINE ON PLANTS.—The *Revue Horticole* tells us that a German naturalist has discovered that if a plant deprived of its starch by planting, be watered with two parts of glycerine to a thousand parts of water, and exposed to light, the starch soon appears; but as this would happen in any case under exposure to light, we do not see what part the glycerine plays.—*Gardeners' Chronicle.*

OYSTER-SHELLS.—The use made of these substances in agriculture leads us to mention the analysis of the shells of various kinds of oysters made by MM. Chatin & Muntz. So far as cultivators are concerned, the principal thing to be noted is the large proportion of line, varying from 48·4 to 53·7 per cent. of the dry matter. Phosphoric acid varies in proportion between 0·01 in the Marennes variety, and 0·90 in the Portuguese oyster. The presence of minute quantities of iodine and bromine goes towards explaining the use of oyster-shells in medicine in olden times.—Ibid.

A JAPANESE DOUGLAS FIR.—In the number of the *Tokyo Botanical Magazine* for Feb. 20, is a description and figure of a new species of Pseudotsuga, discovered in the province of Kii in Japan, at an altitude of 2000 feet, by HOMI SHIRASAWA. Mr. SHIRASAWA puts his new discovery in the genus Tsuga section, Pseudotsuga. The description which he gives (in German happily), and specially the illustrations, leave no doubt as to the correctness of Mr. SHIRASAWA'S identification. The orginal Douglas Fir, as is well known, is a native of North West America, and so far, has been the only representative of its genus or section. That a Japanese form should occur is most interesting. It forms a parallel case to the occurrence of Tsuga Mertensiana and Tsuga gigantea in California, &c., and of Tsuga Sieboldi, Thuya japonica in Japan, and there are other cases of parallelism in the floras of the two countries known to botanists, which furnish ground for interesting speculation. The newly-discovered tree grows in association with Tsuga Sieboldi, Fagus japonica, Magnolia hypoleuca, and others. It has an erect straight trunk, horizontal spreading branches and conical top. The height is given as 15 to 20 métres, with a circumference of 3 métres, so that in point of dimensions it is far exceeded by its American congener.—Ibid.

TEA SALES IN BOMBAY.—An auction sale of Indian teas took place on Saturday, at the office of Messrs. Grindlay, Groom, & Co., of this city But as the agents were determined to hold to their reserve prices, the dealers left the room in a body. On the sale being proceeded with, only five boxes of Orange Pekoe, from the Raipur Tea Estates, were purchased by a Persian shop-keeper, at eight annas and one pie per lb., leaving four hundred and twenty-four cases unsold.—*Bombay Gazette.*

CALCUTTA TEA MARKET: SALE NO. 3.—After the interval of a fortnight the third sale of the season was held on the 13th inst. The room was a fairly full one, most of the old buyers having returned, and there being a sprinkling of new faces, representing some of the large distributing houses of the world. In spite of this the auction was dull the general unattractive quality and the heavy weight of Ceylon tea now being placed on consuming markets being doubtless the reason for the want of competition at the present comparatively high range of values which tea has reached.—*Indian Planters' Gazette.*

COMMERCIAL FIBRES.—The third of a series of Cantor Lectures was delivered before the Society of Arts by Dr. D. MORRIS, M.A., C.M.G., on Monday, April 1, 1895 The following is a summary:—Continuing the review of fibres yielded by the Palm order, the lecturer drew attention to the remarkable vegetable substance, resembling whalebone in strength and elasticity, called bass, or piassava. This is extensively used for making brooms and brushes, and consists of the indurated fibre-bundles thickly investing the stems of Palms. Some are strong and bony, while others are soft and elastic, resembling horse-hair. The bass or piassava of commerce is obtained chiefly from native Palms at Para and Bahia. Latterly it has been obtained from the Wine Palm of West Africa, and still more recently from the Palmyra Palm of Ceylon. The fibres yielded by the husk of the Coco-nut were of considerable commercial importance. They afforded material for brushes, mats and matting, cords ropes, and tow. Coco-nut refuse, on account of its wonderful properties of absorbing moisture, has been recommended for use as a backing material in the construction of men-of-war. Of all vegetable substances, the most noted substitute for horse-hair was the fibre of the Spanish Moss (Tillandsia usneoides). The plant grows in long hanging tresses on Cypress trees in the Southern United States. The fibre is prepared by steeping the narrow stems and leaves in hot water. The preparation of Pine wool from the leaves or needles of the Scotch Fir was mentioned as a local industry in Germany, but now extending to other countries. The supply of material for paper-making was becoming more and more dependent on woodpulp. This was imported into this country to the extent of 216,000 tons annually. It was important, however, to distinguish between mechanical woodpulp and wood-cellulose. In the latter the extraneous matters were so fully eliminated that the pulp was practically pure, and suitable for the best papers. In mechanical wood pulp no chemical purification took place, and although sometimes sufficiently white to be used in "white" papers, the stability of such papers when used in public documents and works of great historical value was open to grave doubt. Many most valuable materials for paper-making, such as the Paper-Mulberry of Japan, and the Nepal Paper Plant, were not at present in European commerce. The lecturer concluded the course by discussing in some detail problems connected with the introduction of new fibres and improvement of fibre plants by systematic selection and cultivation, and by a general review of the methods adopted, by mechanical and chemical means, for the extraction of commercial fibres.—*Gardeners' Chronicle.*

DRUG REPORT.

(From *Chemist and Druggist.*)

London, May 23rd.

CAFFEINE has been rather quiet this week. Makers are said to have sold small lots to the export trade at 19s per lb for delivery in July and August, whilst to the home trade 10-lb lots have been booked at list-price for same deliveries, some of which have been re-sold to second-hand dealers; but, on the whole, business in the article has been limited. Makers, it would seem, are having difficulty in obtaining the raw material, and are consequently acting cautiously in their future engagements, and will not sell on this market for American account, wishing to do the business through their New York agents only.

CINCHONA—The exports of cinchona-bark from Guayaquil (Equador) are officially enumerated as follows:—

	Weight lb.	Value £
In 1893	67,500	2,025
In 1894	157,400	3,094

The exports of cinchona-bark from Porto Cabello (Colombia) in 1894 were 848 kilos only, of which 275 kilos went to Germany and 573 kilos to France.

COCAINE is firmer for the Hydrochlorate. The quantities of the crude both here and in Hamburg seem to have been bought up, and higher prices are therefore probable.

QUININE—A good business has been done up to 12¾d for immediate delivery, and 12¾d is now asked for German bulk; 12¾d paid for July delivery, and 1s 1d for October for German brands. The second-hand stock is gradually being absorbed, and that in an improving market.

London, May 30th.

ANNATTO—Holders firm, 4½d per lb being asked for good.

CAFFEINE—Only retail transactions from second-hands. July delivery 20s, spot 27s. Our last advices from America show a similar retail trade in the article, but at high prices.

COCA-LEAVES—11d per lb is asked for fair green Truxillo, but there was no inquiry at the auctions.

COCAINE—Contrary to expectation, the price of the Hydrochlorate was reduced again yesterday a further 1s 6d per oz, quotations being now 16s 6d to 16s, according to quantity.

KOLA-NUTS—About 40 packages were offered, one case of fair bold Grenada selling at 1s 7d per lb, the bulk, however, was withdrawn at pricess from 1s 3d to 1s 6d.

ESSENTIAL OILS—Cinnamon oil, 8 cases of low quality, sold without reserve, at 5¾d to 7d; Lemon-grass oil sold at 1½d today.

QUININE—Quiet, but firm; 12¾d nearest price for best German brands in bulk. A sale of 5,000 oz October delivery is reported at 1s 1¼d.

VANILLA—The finer qualities sold well at full to dearer prices today.

AMSTERDAM DRUG MARKET.

May 30th.

Our correspondent writing on Wednesday, reports that Cubebs are neglected. Of second Padang Cassia vera there was a good deal offered (200 packages), but there were no buyers, and the same has to be said regarding the prime quality stuff, and as for the medium, 102 packages, amounting to 5,900 kilos were offered, 11½c per half-kilo being named as the price. At the Gum copal auctions, on May 31st, 168 tons of hard and half hard resin will be offered, and 118 tons of softer varieties Prince Batavian Gum Damar has been sold at 43½c to 44c. There has been more inquiry for Cajeput oil, and 1,250 bottles have sold at 115c per bottle

WATTLE BARK INDUSTRY.

We (*Natal Witness*) are given to understand that our German cousins in the Noodsberg District have started a wattle bark mill on their own account. A correspondent writes:—"Good luck to them, but I wonder how long it will last. Since the starting of the above new venture, it seems strange that the wagons of bark roll into town in larger number, even although the price has dropped to zero (3s. 6d). I hear on very good authority that storage is small, and cash, not paper, is wanting. At the same time, it would be wise on the part of Maritzburg buyers of bark not to let the price fall too low. There is a feeling at present among the growers that a 'circle' is being formed. I hope there is no foundation for the rumour."

THE FUTURE OF TEA IN CHINA.

An authority writing on the future of tea in China says:—"I am informed that one early result to the awaking of China which is certain to follow the declaration of peace, will be the taking of steps to improve the manufacture of tea." Our London correspondent has had a long conversation upon this topic with a gentleman having lengthy experience as an importer of Chinese teas. From him he learned that it was possible that those interested like himself would initiate steps to induce the owners of Chinese "Hongs" to import the machinery and obtain the assistance required to introduce such an innovation. But at the same time great doubt was expressed if, even after the severe lesson of late received, it would be possible to stir the strong conservatism of the Chinese sufficiently to compel the required action. We do not ourselves think that it will be possible to do so. Even if it should prove possible to effect this, we do not think the conditions of tea-growing in China would readily yield themselves to the adoption of Western methods in the preparation of the leaf. It would certainly be possible to establish central factories in the midst of a number of gardens, the produce of which might be sufficient to keep the machinery going. But opposed to this there must remain the difficulty of transport to centres of this character. Good roads scarcely as yet exist in any of the Chinese provinces, and we venture to think that it must be a long day before the peasants of that country could be induced to carry the green leaf from their huts, where preparation now goes on, to a central point. For ages past the buyer has visited each small grower and has taken over the tea direct and in readiness for packing. The labour must be greatly increased had the green leaf to be first collected and transported for preparation. No doubt the tea would be much improved if it could be properly treated; but the difficulties in the way seem to us to be almost insuperable. Altogether there is little reason for Ceylon planters to fear that the hope of the home dealers in China tea will be realised. But under any circumstances this article has now became so displaced in the London market by British-grown teas, that we feel sure no efforts of the kind described could suffice to replace it.

NATAL TEA.

THE SEASON'S OUT-TURN.

Mr. G. W. Drummond, of Kearsney Estate, reports as follows:—We are now drawing to the close of the current tea season, and I am glad to be able to say from our own results so far, and from news of our neighbours and the district in general, that it has been the most satisfactory season for the last five years at least. The rains in April gave a splendid fillip to the plants for the end of the season. There are some very large swarms of locusts here still, but they have not touched the tea as yet. Loquats, bananas, and pineapples, however, have suffered a great deal. We should not be surprised, however, if the total out-turn for Natal reached 850,000 lb. of tea, especially as May is promising to be an excellent month, and one million for next season is not only possible, but probably.—*Natal Mercury*, May 17.

PLANTATIONS IN CEYLON AND LABOUR SUPPLY.

It was a decided relief to read the two very sensible letters from the Chairman of the Planters' Association and Mr. Charles Young (see page 17). They offer a strong contrast to the theoretical, and, in our opinion, impracticable schemes advanced from two or three quarters during the past few months. Mr. Melville White at once separates the Planters' Association from any Cooly Agency Scheme and fully justifies the attitude we assumed on this point. He indicates moreover, after a very practical fashion, some of the risks incidental to any private Agency Scheme, which will no doubt be duly considered by planters. At the same time, there is no intention officially, to interfere with any such Agency—only, it would be well to give existing means a full trial before going to the expense of establishing new Agencies.

In this connection, we cannot help drawing special attention to the letter signed "Planter" which appeared in our issue of Tuesday last; because though dated from a Coconut district, it gives the opinions of a gentleman who, more than any other in Ceylon, is entitled to be listened to with respect on any point affecting Cooly Immigration. We almost wish that "Planter" had given his name, to carry home his counsel more forcibly to his brother-planters. He advises a careful study of Mr. Edward Young's Report; and he expresses the belief that the old established Firm of Messrs. Adamson, Mactaggart & Co. at Negapatam can do better for Ceylon planters than any new Agency. He would have them established a branch Agency at Salem—to tap the districts of Tanjore, Arcot, and Salem—and this, we have no doubt, the said Firm would be prepared to do, if they get sufficient encouragement from individual proprietors or managers in Ceylon. We would, therefore, recommend any of those short of labour and unable to trust their kanganies to recruit—after such experience as "a Central Province Planter" gives today—to communicate with Messrs. Adamson, Mactaggart & Co. It has been stated that the partial failure of the operations of this Firm in the past, has been due to the want of a trustworthy leader, guide or kangani to keep the coolies together until they reached their future employer or the estate. But this does not seem at all an insuperable difficulty, especially where one employer is prepared to indent for a considerable number of coolies, so making it worth while to give a responsible leader to the gang.

In reference to immigration generally, can there be any doubt as to the great value which through Railway communication would afford, after the picture given to us of the hardships and extortion to which coolies are exposed in travelling any distance at present? "When the Railway is made to Paumben"—writes "Planter"—and he knows Paumben and Southern India almost as well as Ceylon—"and from Manaar on the Ceylon side," (still more with the viaduct and through unbroken carriage!), "*labour difficulties will vanish.*" Surely then, the practical work which the planters of Ceylon ought to take up through their influential, representative Association is that for which Mr. E. J. Young has given them so good a lead—the urging on of THE INDO-CEYLON RAILWAY. No other work can have so great and beneficial an effect in increasing our supply of coolies from Southern India.

ORCHIDS IN DARJILING.

A Darjiling paper says that the Deputy Commissioner has passed an order to the effect that Orchid dealers are not in future to sell ferns or Orchids in Darjiling, on the ground that the surrounding forests are being denuded of them —*Pioneer*, May 4.

THE CASE OF MR. CHARLES LEDGER.

The *Handelsblad* of Amsterdam, one of the leading daily papers in Holland, has taken up our appeal on behalf of Mr. Charles Ledger, the cinchona-pioneer. In an editorial article in its issue of April 13th, the *Handelsblad* takes for its text our assertion that "sentiment counts for something in the government of the world," and bases upon it an appeal to the Dutch Government to allow Mr. Ledger a pension of £100 a year. We shall be agreeably surprised if this appeal should be responded to. To agree to it would certainly be an act of generosity on the part of the Dutch Government, which would put our India Office to shame, and a mark of broad-mindedness such as few nations show in the case of individuals not connected with ruling families. In presenting its case for Mr. Ledger, the *Handelsblad* gives a short account of cinchona-cultivation in Java, and expresses the belief that a proposal, on behalf of the Ministry of the Colonies, to give Mr. Ledger £100 a year would be accepted by the Dutch parliament.—*Chemist and Druggist.*

CINCHONA AND QUININE.

The following translation and figures from a Report on cinchona and quinine of the well-known Dresden Firm, Messrs. Gehe & Co., is of much interest: it will be observed that stocks of bark (as also quinine) are low in London, but large in Amsterdam:—

STOCKS IN LONDON 31ST DECEMBER.

	1894 Pkgs.	1893 Pkgs.	1892 Pkgs.
South American	20,065	23,245	23,014
From other countries	11,981	14,596	15,879
Total	32,060	37,841	38,895
Imports London	1894	1893	1892
South American	10,461	8,135	12,897
Other Countries	18,713	28,892	33,464
Total	29,174	37,027	46,361
Deliveries	1894	1893	1892
South American	12,741	8,501	16,746
Others	21,378	29,580	39,843
Total	34,119	38,081	56,589

EXPORT FROM CEYLON FROM 1ST JANUARY TO 17TH DECEMBER.

	lb.		lb.
1894 ..	2,438,993	2981 ..	6,665,194
1893 ..	3,525,522	1891 ..	5,679,339

EXPORTS FROM JAVA TO AMSTERDAM.

1894	kilos	3,316,339	containing kilos	157,820	Quinine
1893	,,	3,369,505	,, ,,	149,540	,,
1892	,,	2,953,826	,, ,,	130,491	,,
1891	,,	3,431,530	,, ,,	133,721	,,
1890	,,	2,901,891	,, ,,	108,400	,,
1889	..	2,073,389	,, ,,	77,060	,,

SOLD IN TEN AUCTION SALES IN AMSTERDAM FROM 25TH JAN. TO 13TH DEC. 1894.

Unit.		Kilos.		Kilos.		Kilos.
4	25 Jan.	513,370	cot'g. Quinine	22,913	of which sold	22,200
4.4	1 Mar.	336,310	,,	16,437	,,	15,831
4 7-16	5 April	513,454	,,	24,625	,,	20,382
$4\frac{3}{4}$	10 May	349,690	,,	16,403	,,	14,155
$4\frac{1}{4}$	14 June	418,012	,,	19,554	,,	18,481
$4\frac{1}{2}$	19 July	279,407	,,	12,554	,,	12,288
$4\frac{3}{4}$	30 Aug.	429,558	,,	20,276	,,	18,757
3	4 Oct.	603,140	,,	28,834	,,	7,070
3	8 Nov.	512,590	,,	24,631	,,	11,789
$2\frac{7}{8}$	13 Dec.	699,985	,,	34,262	,,	16,867

Total sales kilos Quinine		157,820
Against 1893 kilos	..	149,540
1892 ,,	..	130,491
1891 ,,	..	133,721
1890 ,,	..	108,400
1889 ,,	..	77,060

Bark sold in Amsterdam during 94 consisted of

kilos	2,711,049	Ledgeriana.
,,	325,748	Hybrid.
,,	205,878	Succirubra
,,	63,939	Officinalis.
,,	9,725	Calisaya.
Total kilos	3,316,339	

Stocks Amsterdam 1st January.

1895	1894	1893	1892
Pkgs.	Pkgs.	Pkgs.	Pkgs
24,635	14,184	11,268	5,279

Export of Quinine from Germany in 1894	kilos	139,500
Importation from England ..	,,	4,100
Exports nett	kilos	135,400

Imports of Bark into Germany 1894	kilos	3,627,100
Exports	,,	70,100
	Kilos	3,557,000 consumed by manufacturers

IMPORTS INTO THE UNITED STATES.

	1894	1893
Cinchona Bark lb. assay	2.683,962	2,183,128
Quinine Salts oz.	2,298,193	2,777,567

Stock of Sulphate in London, 1st January 1895 2,753,072 oz.
Against 1894 3,134'720 ,,

TEA IN THE FAR EAST.

(Latest Export Report.)

EXPORT OF TEA FROM CHINA TO GREAT BRITAIN.

	1895-96. lb.	1894-95 lb.
Canton and Macao ..	88,830	112,560

EXPORT OF TEA FROM CHINA TO UNITED STATES AND CANADA.

	1894-95. lb.	1893-94. lb.
Canton ..	3,547,932	1,349,192
Amoy ..	19,447,739	21,321,332
Foochow ..	8,140,519	5,883.106
Shanghai ..	25,783,527	24,176,826
	56,919,717	52,730,465

EXPORT OF TEA FROM CHINA TO ODESSA.

	1894-95. lb.	1893-94. lb.
Hankow and Shanghai	22,555,223	21,619,462

EXPORT OF TEA FROM JAPAN TO UNITED STATES AND CANADA.

	1894-95. lb.	1893-94. lb.
Yokohama ..	28 767,467	28,623,687
Kobe ..	16,879,951	17,213,605
	45,647,418	45,837,292

THE *Planter* notices an uncommon occurrence reported from Ranchi. A mango tree, on which some fruit had set and grown to about one quarter of the full size, has sent out flowers on the branches which did not flower before. This is the only tree among the group which bears flowers and fruit together.—*M. Times*, May 12.

OIL GAS ENGINE.

THE CASTLETON TEA ESTATE, Darjeeling, has put down an oil-gas engine 16 h.p. and a new Blackman drier.—*Planter.*

TEA IN INDIA.

(From the *Planter*, April 13.)

Sylhet has every promise of a good season, if they only escape hail. Manufacture has now commenced on most gardens, although this district is generally pretty late at commencing.

An invoice of seventy chests from the Central Terai gardens is one of the first arrivals of the new season's tea in Calcutta.

Our Dehra Dun correspondent writes:—"I have been told that several gardens have suspended plucking for the time being, as the bushes are hanging back so much on account of the sudden fall in the temperature that they appear to be at a perfect standstill."

Our Ranchee correspondent writes: "The thermometer has been up to 94°. This was on the 5th April, and on that day the wet and dry thermometers showed a difference of 26 degrees. During March rain threatened several times, but it did not come down in useful quantities. Altogether it looks doubtful whether this will be a good season for quantity, and as there was a severe drought up to the end of May last year, another drought may be serious and do some harm to tea bushes. Since 1890 each alternate year has had short rainfall up to the end of May. In 1891 and 1893 heavy rain fell early in the year, but the rule seems to be changed now."

CACAO PLANTS IN DOMINICA.

The following letter received from the Lasoye district of Dominica may be of interest to intending cacao planters.

Melville Hall, Dominica, 25th October, 1894.

Dear Mr. Barber,—I send herewith the measurements of the cacao planted by myself on this estate, the rapid growth of which will, I feel sure, be of interest to you.

The height of stem from ground to fork is 2 feet 1 inch: length of main branches 2 feet 6 inches: length of first laterals 1 foot 2 inches: stem circumference, at base, 3½ inches, near fork 3 inches: length of longest leaf 13 inches.

The seed from which this tree was grown was obtained from the Botanical Station on October 4th of last year and planted by myself a week later. It is the nearest approach to the Criollo variety growing at the Station, the pod being similar but seed rather larger. Originally grown in a bamboo pot it was planted out five months later.

Many trees of the same lot are taller, and with the fork; but the one of which I send measurements is the most forward.

Trusting this may be of interest and with kind regards,—Yours faithfully, H. W. GRAY HUTTON.

This is a case of very rapid growth, and from the measurements a very healthy and well shaped tree. It is of interest to note that there are many parts on the windward coast of Dominica where cacao would grow excellently, provided that ordinary precautions were taken to shield the plants from blasts of wind down or up the valleys and the steady sea breeze. There is practically no cacao grown along the coast from Hampstead to the neighbourhood of Boetica. Many of the valleys which are now out of cultivation could easily be placed under cacao, provided that advantage were taken of the protected portions and additional tree-belts placed where necessary. No shade trees of any kind are needed in Dominica excepting for very young cacao plants.

Many plantations in the neighbourhood of Vieille Case are unprotected from wind. The effect of this is seen in the blasted appearance of the outer trees which on the other hand form a hedge for those within.

As to the kind of cacao for Dominica there can be no doubt that, if properly tended, there is none to equal a good Forastero. This kind has been persistently sold by the Botanical Station during the last three years. The plants sent out, with the solitary exception of the tree bearing the variety mentioned in Mr. Hutton's letter, are of one kind, being obtained from a singularly successful and uniform plantation in Montserrat.

Up to the middle of last year there had been distributed from the Botanical Station 1615 plants in pots, and 47,070 seeds of this one variety. The object of this has been to try and improve the quality of the Dominica product, at the same time giving it uniformity of sample.

The great quantity of cacao now shipped is settlers' cacao of the Calabacillo kind. The trees are very hardy and bear well. They thrive with little care and bear profusely. The beans are however very flat, dark and bitter, and it is almost impossible to prepare a good sample. It rests with the planters of Dominica whether they will go on improving the general sample of the Island by continued planting of a good hardy kind, or allow the cultivation to sink back to its level of settlers' cacao by planting the old local variety. —*Agricultural Journal.*

THE KITTUL PALM.

The Wine Palm or Kittul Palm attains a height of 50 or 60 feet, and is remarkable for the peculiar form of the leaflets, which have been compared to those of our common Maiden Hair Fern. The leaves themselves are from 18 to 20 feet long. It is a native of Ceylon and India, growing in forests in the hilly districts where teak and the wild mango abound.

The Kittul fibre of commerce is prepared from the sheathing leaf-stalk; it is used as a substitute for bristles for making brushes, baskets, etc. The value is from 3½d. to 10d per lb. It is said that in Ceylon ropes made from the fibre are used for tying elephants. Roxburgh says it is highly valuable to the natives of the countries where it grows. "It yields during the hot season an immense quantity of toddy, or palm-wine. I have been informed that the best trees will yield at the rate of one hundred pints in the 24 hours. The pith or farinaceous part of the trunk of old trees is said to be equal to the best sago; the natives make it into bread, and boil it into thick gruel; these form a great part of the diet of the people, and during a famine they suffered little while the trees lasted. I have reason to believe this substance to be highly nutritious."

The Wine Palm ends its existence by flowering. The first flower stalk appears at the top of the tree, as soon as that has done flowering, another appears lower down, and so on, till the last one blossoms at the foot of the trunk, proclaiming that the death of the tree is near at hand. These flower-spikes hang down in large bunches, producing quantities of round, reddish berries. The wood is strong and durable, used for agricultural purposes, water conduits and buckets.—*Indian Agriculturist*, May 1st.

PIONEERING AND TEA PLANTING AND MISSION WORK IN ASSAM FRONTIER.

From the letter of the Rev. J. A. Graham of the Scottish Missionary, dated Naya Sylee Tea Estate, Dooars, we quote as follows from "Guild Life and Work":—

For the first time I have been on the Assam frontier, and so touched our most eastern boundary. There would not have been much object in going there before this year, for then one would have found nothing save huge grass jungle land. But a few months have changed all. Now, on the banks of the Sankos, which is the dividing river, is a young Scotchman—Mr. Craig, known to East Kilbride Guildsmen—and with him a band of Nepali, Mechi, Nagpuri, and Santhali coolies, all busy converting the haunt of the tiger, the elephant, the leopard, the rhinoceros, the wild cow and buffalo, the deer and the pea-fowl, into a prosperous tea-garden, to supply you folks at home with the cup that cheers. I am staying with Mr. Craig's neighbour, Mr Murray (brother of the Minister of Greyfriars, Aberdeen). They two have charge of many thousands of acres of fine virgin soil for your Glasgow firm of Duncan Brothers. It gives a fine example of British enterprise and pluck to see a fellow-countryman go out with his tent into the forest and begin to carve out of the wilderness a smiling tea-garden. Rough, hard work it is to begin, but in three years he probably has the pleasure of seeing his own substantial bungalow and great factory in the midst of 1,000 or 1,500 acres of tea. And as we rode the last part of the way on Mr. Murray's elephant, one could not but marvel too at the power of man over the wild beasts around; for there was that huge animal, who but a few years ago would be roaming at will over those very plains, now controlled with the utmost precision by a single man. During the last two years over 300 elephants have been caught by Government in the Dooars part of our district. All along the foot of the hills I have met occasional members of our Church. At Rangamuth, about 30 miles west of the Sankos, is stationed Jitman, the evangelist of the Foreign Mission to Bhutan, supported by the native Christians themselves. We have also a school, and I had the pleasure of baptizing there a woman and two children. Two days ago Naiman, the Dooars catechist for the Nagpuris, met me at Piskor, where there are nearly thirty Nagpuri Christians, and after a delightful service we baptized three persons who had been a year on probation. In the earlier part of the journey Dilbir, the Nepali Dooars catechist, accompanied me, and we had some baptisms. Every night we have a magic-lantern exhibition for the coolies of the garden where we happen to be staying; and on Sundays we have services for the planters. At yesterday's service in Mr. Oliver's (Nagrakata) fifteen of us met together. Not the least pleasant part of such a tour as this is the meeting with so many planters in their own homes. In every bungalow one finds a hearty welcome—for a planter's hospitality is proverbial—and in all districts are Scotsmen! Not, indeed, that they surpass in hospitality those who hail from south of the Tweed or across the channel! This morning I am starting up the Jaldacca River, through Bhutan, to visit Dongbu's people at Tode, and to baptize some others of his household. A planter friend is to accompany me for three days on foot.

Mr. Graham seems to be the right man in the right place.

TEA MERCHANTS.

These tea merchants seem to have their day the same as with other trades. Formerly it was John Rose and Co. Then for a time we heard of nothing but Horniman, followed by Cooper, Cooper and Co., and then "Mazawatte." Twenty years ago the name of Lipton was not even known, and now he tops the lot. The others, we have no doubt, are all flourishing, but we do not hear so much of them.—*London Paper.*

WOOD FOR TEA-BOXES.

A large quantity of "shooks" are imported from Japan: they belong to some coniferous wood, probably *Cryptomeria japonica*, and though they cost rather more than Simul at the outset, nevertheless, as they are thoroughly seasoned and ready for dove-tailing, they can all be utilised without any loss. Consignments of what is known in the trade as "spruce" are received from Vancouver's Island, and some redwood, probably a kind of *Dipterocarpus*, comes from Burma. At first sight it may seem strange that with her large forest area Assam should have to depend for the tea-box woods from distant countries, but it is essential among other conditions that for a wood to come into practical use on a large scale the tree which yields it must be gregarious; it will never pay to employ a wood which is only found scattered here and there. Thus, though there are in the Dehra Dun forests several trees adapted for tea-boxes, it is probable that the planters of that district will eventually use either spruce or silver fir from the neighbouring Himalayan forests, as soon as their available supply of mango trees has been exhausted. —*Timber Trades Journal*, April 20.

PLANTING IN KLANG, SELANGOR, STRAITS SETTLEMENTS.

(From the *Selangor Government Gazette*, April 26.)

ESTATES OF AN ACREAGE OF 100 ACRES OR OVER.

Name of Estate.	Nature of Cultivation.	Proprietors.	Managers	Area in Acres. Total	Area in Acres. Under Cultivation.
		KLANG.			
..	Coffee	T H Hill ..	.. ..	2,500	60
Triangle	.. .. ..	J R Rodgers ..	T Gibson ..	500	..
Tremelbyr	Coffee and pepper ..	L C Treweeke and H Melbye ..	B Nissen ..	516	110*
..	Coffee, sago, and vegetables ..	Lim Swee Keng and Ong Chee Siew..	Lim Swee Keng ..	1,781	280
Batu Unjor*	Coffee	K Tambusamy Pillay and Lok Yew ..	Syed Mohamed ..	619	54†
Highland*	Do	W W Bailey ..	A Walker ..	300	..
Lowlands*	Do	Do ..	Do ..	300	60
Klang	Do	A Forsyth ..	H Inniss ..	500	50
Forlorn Hope*	Do	H A W Aylesbury ..	F A Toynbee ..	1,000	..
..	.. .. ..	H W H Conning ..	A Walker, G R Prior Asst. ..	320	..
..	.. .. ..	W Forsythe ..	T H Hill ..	328	..
..	Coffee, etc.	Haji Mohamed Tahir	Haji Abdulrahman .	353	373‡
..	Do	Do ..	Do ..	104	104§
..	Coffee	Haji Nacoda Usop ..	Haji Samsudin ..	323	300
		BUKIT RAJAH.			
..	Coffee	H H Tunku Dia Udin	Sheik Abdul Mohet ..	2,000	300
..	Do etc.	Haji Mohamed Tahir	Haji Abdulrahman ..	103	50¶
Beverlac	Coffee and pepper	G H Stephenson & Brothers ..	P Stephenson ..	250	32‖
..	Coffee	Kairau bin Tamsair..	Kairau bin Tamsair..	100	45
		DAMANSARA.			
Jeang Eng Hin	Tapioca	.. ..	Kow Soon Kiat ..	3,000	800
Ebor	Pepper	G H Stephenson & Brothers ..	P Stephenson ..	400	21
Enterprise	Coffee and pepper	H Huttenbach & Co.	F A Hurth ..	443	62**
Glenmarie	Do	Do	Do ..	563	85††
			Total..	16,295	2,786

* Started in 1894.

The following prophetic forecast by Mr. Swettenham in the Selangor Administration Report for 1887 may be of interest :—"The Klang District, however, bids fair to lead the State in matters agricultural, and it is a subject for congratulation that the principal port of Selangor and the terminus of the railway should possess such solid attractions for capitalists and peasants."

It is true the capitalist and peasant have flocked to the Kuala Lumpur District, but Klang easily leads the rest of the State as an agricultural district.

Klang has become a regular home to the Javanese, their numbers here steadily increasing year by year. Quiet, steady, frugal, hardworking people, they offer a pleasing contrast to the casual Malay in the way they clear, drain, plant and weed their coffee gardens. Even the Chinamen who have embarked in coffee keep their land weeded, even if they do plant kladi between the young plants for the first year or two. But as for the Malay, he has no thought for the morrow, and calmly allows his young plants to grow up amongst lalang because he is too lazy to work.

To report on the progress of cultivation is simply to say that Europeans, Javanese, Chinese and Malays who hold land in the Klang District are planting it up with coffee as fast as their means will allow them.

No new pepper has been planted, owing to the low price of pepper, which has been steadily going down in the market for the last five years, until pepper estate proprietors seem on the verge of ruin.

To sum up the position of Klang as a field for coffee planting, we find 2,710 acres of land in the Klang Mukim have been taken up by Europeans during the year. Twelve blocks of virgin forest land amounting in all to 3,810½ acres have been surveyed and will be offered for sale by public auction at an early date. The area of customary native holdings has increased from 3,516 acres in 1893 to 4,570 acres in 1894, and there are three demarcators now in the field with enough work to last them for a year. The Selangor Coffee Curing and Trading Company has established itself here to buy up and prepare the coffee berry for the market, and is already reported to be working at a profit. Coffee is the King of Klang.

TEA AND OVER-PRODUCTION.

A correspondent of the *Englishman* has taken up the parable of the tea planter and the limited market which has been so earnestly preached of late in Ceylon, and urges the absolute necessity there is for India to extend her market for tea if the industry is to prosper. From this it would appear that the over-production scare has spread to this country, and it is just as well perhaps that it has, for there can be little doubt that Indian planters have been too long content to let their produce push itself. With the keen competition there now is, India must be up and doing with the rest, and if the "scare" has the effect of rousing the country out of its lethargy well and good.—*Madras Times.*

THE RAILWAY TO INDIA.—In the *Contemporary Review* for April, Mr. C. E. D. Blacklaw revives the project of a Railway from the Mediterranean to India. He proposes to connect Port Said and Kurrachee through Syria, Persia and Beluchistan on the Indian broad gauge, 2,300 miles at £5,000 a mile or £12,000,000 in all—with £3,000,000 for rolling stock, or 15 million sterling in all. We have not the slightest doubt that this, or some other project, will ere-long be taken in hand. We are entering on a new era of "Railway Construction" more especially to serve the interests of the British Empire, and before the new century is very old it will be possible to travel from Colombo to Port Said all the way by rail.

* 75 acres coffee, and 35 acres pepper. † Felling and draining in hand. ‡ Coffee 182 acres, arecanut 70 acres, coconut 25 acres, fruit trees 76 acres. § Coffee 96 acres, fruit trees 8 acres. ¶ Coffee 30 acres, arecanuts 15 acres, fruit trees 5 acres. ‖ Coffee 15 acres, pepper 17 acres. ** Coffee 25 acres, pepper 37 acres. †† Coffee 45 acres, pepper 40 acres.

ROLLING TEA.

TO THE EDITOR OF "THE PLANTER."

SIR,—As economy will be the chief feature of tea-making in the future, it is not too soon to enquire whether the present rolling machines are all that can be desired. The "Rapid" roller has proved to be the favourite, as well as the latest evolution in rolling machines, but it takes its time, and it takes plenty of power. You can't get much of a roll on leaf under 30 minutes rolling whether done once or twice, and I have an idea that some of the old bag machines would work more quickly, although perhaps they will not put the same twist on to the leaf. It would be interesting to get statements of the relative power of bag machines and box machines in mashing the leaf up to a certain stage, because I think it highly probable that the bag machines would prove more economical up to a certain point.

It is doubtful, and extremely improbable, that the former can ever supersede the latter, but it may prove to be a very valuable help in preparing leaf for rolling, as well as for finishing off the coarser leaf separated by sieves after the first roll. The packing of the leaf into bags would form a convenient means of transporting in to the rollers, and five minutes mashing would possibly bring the leaf into as forward a stage as ten minutes in a box machine.

I know that the first idea on reading this will be that bag machines are sufficiently proved to impair the quality of the tea, and I have no doubt myself that for the whole operation the box machines turn out a tea of superior quality, but I urge the point solely on the score of economy, and I believe that the very slight (if any) deterioration of quality entailed by a few minutes pounding in a bag, would not be noticed by present-day brokers and that it would not reduce prices by the smallest fraction.

To any small estate which contemplates increasing the number of its rolling machines I think that it would prove economical to purchase a bag machine. 1874.

BRITISH NEW GUINEA AS A PLANTATION COLONY.

BY SIR W. MACGREGOR, K.C.M.G., M.D.

(Extracts from Address in the Town Hall, Manchester, March 8th, 1895.)

When I was invited to read a paper before this Society it was intimated to me that it would be desirable that it should touch chiefly the commercial aspects of British New Guinea, while at the same time the more purely scientific questions connected with that place should not be altogether forgotten. In trying to comply with this, we shall therefore, consider briefly the country and its surroundings, its people, its present exports, and its potential productions.

Speaking roughly, the island of New Guinea, with its attached small groups, extends from the 129° to the 155° of East Longitude, and from the equator to the 12° of South Latitude. Only something more than a quarter of the great island belongs to the British Empire, but even this fraction is larger than the island on which we now stand.

The latitude of the colony, it is worth while to remember, is from 5° to 12° South—in other words, it is as far from the equator as it is possible for it to be without entering the hurricane zone, a position which, from an economic point of view, must be considered the best possible for a tropical colony.

Beginning at the east end of the Possession, on the mainland, a lofty range of mountains, running towards the north-west, goes from practically one end to the other, presenting many heights of 5,000 to 10,000ft., and attaining in Mount Victoria, the highest point of the grand and magestic Owen Stanley Range, an altitude of 13,000ft. This great mountain system is wooded, is generally steep, and is to a large extent uninhabitable. On account of their height, their great extent from east to west, and their dense covering of vegetation, they are generally cloud-capped some part of the day in all seasons, and collect an immense amount of rain, which sends down rivers that are numerous and great out of proportion to the area of the country.

The broadest part of the island of New Guinea is near the longitude of the British-Dutch boundary. Naturally, therefore, our largest rivers occupy that end of the colony. These are the Fly and the Purari. The Fly opens into the sea some 130 miles east from the Dutch boundary, but it trends towards the north-west, and brings down a large amount of water from Dutch and German New Guinea. It is navigable to a steam launch for nearly 500 miles. Gold is found in its sands as soon as those are met with, after an ascent of over 400 miles. There may be some land fifty to eighty miles from its mouth fit for cultivation by Europeans, but this would require special examination. The Purari like the Fly, is not very inviting to the land seeker, though it is hoped that from it we may obtain good serviceable coal, as it traverses a great sandstone district in which specimens of excellent coal have been found. But good land for growing sugar cane, corn, or any similar crop: also good sites on low wooded hills for coffee, tea, and products of that kind are obtainable on several of the gulf rivers, with good water carriage to the spot. In connection with these sago manufactories could be established on some of the rivers, for there are extensive tracts of sago trees that are not required or used by any natives, and that, in fact, having no owner become Crown property and could be sold or let to any suitable company.

Further east there are many small rivers and salt-water inlets, affording water carriage, and often with good alluvial and hilly land which would be convenient for the planter, and which could be obtained without encroaching on the native or alienating their goodwill in any way.

The north-east coast has three fine rivers, on two of which there is a large amount of sago available for the manufacturer, and the country near the hills is in every way extremely pleasant. The islands would supply some very good places for coconut plantations, but they would for other products probably be inferior to the mainland. Generally it may be said that the interior of the country is mountainous; that in front of the mountains in the western quarter the country is low and swampy, and that elsewhere, between the mountains and the sea, there are practically all kinds of soils and positions.

During the period from November to May winds are unsteady and northerly; the temperature is then highest and thunderstorms are of daily recurrence. From June to November a fresh south-east wind blows in from the ocean. The great masses of rock forming the central chain of mountains are so protected by their dense covering of vegetation that they do not become heated by the sun's rays, and they always produce cool currents of air at night. The heat is thus not great for the latitude of the country, probably hardly ever over 90° Fah. in the shade, usually about five to ten degrees below that. Probably white men could hardly work continuously in the sun, but the hardy diggers toil on all day in the Louisiade group, being, however, generally protected from the sun by the forest in which they work. The natives have to do a good deal of labour in some places in order to live, but they do not work steadily, and naturally do not feel ill-effects from the climate.

The principal form of sickness is fever, which is of a more tractable and less severe type than tropical fevers generally are. If reasonable care is exercised it would not interfere to any serious extent with planting operations, whilst dysentery, ophthalmia, venerial diseases, and other contagious maladies would cause neither loss nor trouble, unless these maladies are introduced from beyond the colony. It is only reasonable to suppose that it could hardly be a favourable place for white children, and probably it is not, speaking generally, a country in which European families should be reared. It is more a country for outdoor labour by coloured men under white supervision. But under cover a Euorpean can work at anything without detriment.

PRODUCTS.

The total value of the exports entered at the Custom House in the year ending 30th June, 1894, was, in round numbers, £15,000. To this should probably be added £8,000 or £10,000, representing the value of the pearls not declared outwards. One of the first items to notice is trepang. Its value was £1,714. It may be pointed out at once that the boundary of Queensland as at present fixed extends across the straits to within a hundred and fifty yards of New Guinea, and thus cuts off the fishing ground on the west that should naturally belong to the Possession. In addition to the economic unfairness of this distribution, it gives rise to the awkward fact that officers of the New Colony cannot visit the western part of the Possession without entering Queensland jurisdiction. The Queensland boundary was fixed before the annexation of British New Guinea, and Queensland is now prepared to rectify it. This will add something to the value of the fisheries in the west. The reefs have been fished for years for trepang, and it will in any case only remain as a small industry and not capable of much expansion. Copra was exported to near the value of £3,000. This should, in time to come, be an export of great dimensions. The coconut tree is in all countries most at home near to the sea, and it happens that the Possession has an enormous sea frontage, reaching according to the estimate made in the office of the Surveyor General of Queensland, something over 3,500 miles. This, of course, includes the sea frontage of both the mainland and the islands. There is no part of the colony in which this tree does not seem to thrive. It certainly bears well up to an altitude of over 3,000 ft. It has been planted from time immemorial by the natives, but only on a very small scale in most places. Various reasons have tended to keep the groves small. A weak tribe would only have excited the cupidity and hostility of stronger tribes by growing large quantities. On the other hand, several powerful tribes have valuable plantations. In other places they were cut down as acts of war, a manifestation of power not quite unknown to white men in dealing with natives. In certain districts, again, a man's coconut trees were cut down as a mark of grief when he died, or of joy on the birth of his firstborn. To a large extent these destructive practices have been checked, and all that is possible is being done to urge the natives to extend their plantations. A native regulation has been introduced into operation in the more settled districts to make compulsory the planting of a minimum number of coconuts.

A few Europeans are also forming plantations. Some of the trees planted at the Government station in the Mekeo district were flowering before they were quite three years old, but it would not be safe to count on a crop under six or eight years. There is practically unlimited land available for this cultivation, which might be entered into on a large or small scale.

It has already been pointed out that the colony lies just outside the hurricane zone. The advantage that this affords in coconut planting, for example, over such places as Fiji, Samoa, and Tonga is enormous. A large coconut plantation in British New Guinea when once in bearing would provide one with a perennial source of income. In no country are the trees more prolific; perhaps no other colony we possess offers equally good and extensive opportunities for conducting this industry to high figures. It is a cultivation that could be advantageously carried on by men of even limited capital, though it should not be taken up by a moneyless man. A person who could earn money by fishing or trading part of the year, while devoting his spare time to planting, could in a few years work himself into a coconut plantation if he had ordinary good fortune and a small capital to start with.

Gold to the value of £3,900 was entered outward. This was sent from the islands of Misima and Tagula in the Louisiades. Of course the amount entered at the custom house does not truly represent the quantity actually obtained, but the work carried on is only on a very small scale. The gold has been found by laboriously washing the sand and gravel in the numerous creeks that meander in the forest and those have been nearly washed out. There is some reason to expect that gold-bearing reefs may be discovered. Several good veins of auriferous quartz are known, but they are thin and have not, so far as tested, appeared to gain in thickness with depth. On Misima the diggers employ natives to work at sluicing at so much a day, but on Tagula the natives have been setting up on their own account, and wash out gold for themselves.

The search for gold is extremely difficult, owing to the denseness of the forest and the rough and rugged nature of the hills. Strong traces of gold are found on the upper Fly; they are also met with on the Purari, Lakekamu, Angabunga, Goldie, Vanapa, and Mambare rivers. In the east end it has been seen at Yela or Rossel Island, at Duan and Goodenough Islands, and also at some other places. It is an arduous and difficult journey to ascend the strong-running rivers to the hill districts in which this gold is most generally met with, and it will be a long period before the Possession can be even roughly prospected.

In a countay that would be trying for the wives and children of white men the gold industry would not be of so much advantage as in a country like Australia or New Zealand, which are from their geographical position the permanent homes of the white race. Still it could not fail to be of some use to even British New Guinea, although it would not probably add very much to permanent settlement. The Government has had good reason to be satisfied with the treatment of the natives by the diggers from Australia, who are a law-abiding, hard-working set of men, taking them as a whole. The only regret is that the extremely limited means of the Government renders it impossible to offer them any special facilities. It is at best only a fugitive industry in New Guinea, and if the Government had any money to devote to the encouragement of any industries, those of a permanent nature, like agriculture, would deserve a preference. Now that the search for gold has been taken up by the native on his own account, the finding of gold on a small scale will probably never die out, but the native may very likely, sooner or later, lead us on to more extensive deposits. Pearl shell was procured to the value of £3,366. This article is found over a great area of fishing ground in the eastern waters, but unfortunately the sea is often from twenty to thirty fathoms deep where the best shell is found. Several attempts have been made to improve the diving gear, so as to make it safe for picking up shell at those depths, and if this could only be done the pearl shell fishery of the colony would be a valuable one. The waters of the Possession would seem to be well adapted for farming the shell.

The pearls have generally been found in shallow water shells, mostly in the Kiriwina group, not so much in the ordinary pearl shell although found there also. They are obtained by natives, who will soon exhaust the fishery as the shell is easily reached. Probably this shell would be the best one procurable for the cultivation of pearls, as its home is in a small depth of water and it produces many pearls.

Of sandal wood 321 tons, valued at £1,896, left the colony. The market for this article appears to be limited—less than Western Australia alone could supply. It is found in the Possession near shipping ports, and labour is cheap, so that with average prices it can be worked on a small scale at a profit. The supply there, as in all other sandal wood countries, is easily exhaustible, but it will remain a small industry for some time, and will no doubt be taken up by the natives on their own behalf.

The value of imports was £28,500, making a total trade for the year of £43,500.

The principal items imported were: Food stuffs, £7,181; drapery, £2,687; tobacco and cigars, £3,985; hardware, £3,162; beverages, £1,760; and building materials, £2,889.

Food stuffs consist chiefly of rice, meat, and biscuits, imported from Australia.

Drapery is beginning to be used by the natives in certain districts, but it will be many years before they

all take to the shirt or loin cloth; those who can afford it take kindly to a jacket and trousers.

They are very fond of tobacco, and in all districts where it is known they prefer the imported American trade article to the home-grown variety, which is simply dried in single leaves, and is not nearly so powerful as the manufactured trade tobacco. No doubt this will for a long time to come continue to be a growing import as we approach new tribes.

The use of hardware is steadily extending, but there are probably hundreds of tribes in the interior who do not yet know the use of iron, but who will use it in a few years.

The native has only a small share in the beverages and building materials imported.

POTENTIAL CAPABILITIES.

To you, perhaps the most interesting, because the most practical, question is, What are the potential capabilities of the country? Can capital be advantageously laid out there?

I believe that money could be employed there to the benefit of the capitalist and to the advantage of the people.

In the fishery this could probably best be done by combining the ordinary diving operations for pearl shell with the farming of leased areas of sea bottom for the cultivation of sponges, pearl shell, and the pearl-bearing shell of Kiriwina. The ordinary fishing grounds have not been prospected with any care, but there certainly are many places where these cultivations could be favourably carried on. The Sponge used by the natives of Yela Island in the Louisiades for washing the face is a good one, and there is a great lagoon there for the location of sites for cultivation. The men engaged in looking after these establishments could be employed also in the ordinary pearl shell fishery when not required at the stations. The Government would be prepared to lease areas for this purpose on very easy terms.

The search for gold is a matter that each person must decide for himself. The probabilities are that there are other districts than Misima and Tagula that would yield payable gold, but it is at best an uncertain and usually short-lived industry, best worked by those having local experience. Capital should be put into it only on the deliberate advice of men thoroughly competent to express an opinion in each given case.

The search for gutta-percha and allied products seems to show that a profitable industry could be opened up in that line. Some examples that have been tested have been pronounced of superior quality. These articles are obtained from a number of different trees that are found over a widely extended area. The great want hitherto has been the presence of skilled labour to start the industry. A few hands would have to be brought from some country where this work is already established. Alluvial land could be obtained that would be suitable for the cultivation of rubber trees. The introduced variety is thriving splendidly at Port Moresby.

A cultivation that could in all probability be advantageously cultivated there would be sisal hemp. For three or four years efforts had been made to obtain this plant from the Bahamas; but this could not be done, as that colony apparently wished to retain a monopoly of this cultivation. The Government of Queensland has, however, recently succeeded in obtaining a large number of tho plants, from which New Guinea is being supplied. Plants very nearly related to this one, if they are not indeed indentical, already flourish at Port Moresby. With rich soil, land at two shillings and six pence an acre, and with cheap local labour, this cultivation could be made profitable in the colony, if it can be made so anywhere. It is not likely that it could be advantageously grown in Australia, unless there is a great fall of wages there. It would seem to be well adapted, however, in every way for British New Guinea.

As already mentioned, there is great scope for the cultivation of the coconut. It is one of the slowest, but one of the surest form of tropical cultivation, provided that it is in a country which, like British New Guinea, is outside the hurricane zone. No doubt the most profitable way of working copra will be by direct shipment to Europe. Hitherto it has been sent to Australia, to be carried thence to Europe by reshipment, usually by steamer. But the quantity obtainable will soon be sufficient to allow of direct shipment by sailing vessel, which would greatly reduce expenses connected with freight. The copra trade of the Solomon Islands could probably be brought by way of Samarai for the same direct transport. There are a few unoccupied islands in the east end which are adapted for small plantations of this kind, and land suited for it is obtainable at many places on the other islands and on the mainland. Very favourable sites could be had for converting the coconut into oil, butter, and coir yarn. There is undoubtedly in this industry a good field for the investment of capital. It is a cultivation that can be well combined with others.

For growing tea and coffee, land in large quantity is procurable at any altitude that may be desired, and on almost any kind of soil. Tea and coffee, both of Arabian and Liberian kinds, are already in bearing in the Possession, and both free of coffee leaf disease. The introduction of further coffee seeds and plants has been prohibited by law in order to prevent the importation of disease Healthy seeds and plants can be obtained by the planter on the spot.

Vanilla grows luxuriantly, and suitable land can be had for its cultivation in abundance.

Few things would seem to offer a more inviting outlet than the cultivation of tobacco in New Guinea. The plant that has long been domesticated is, though small, perhaps one of the finest that can be grown. It has probably come from the Malayan archipelago, as it has certainly reached the very heart of the island, from 5° of South Latitude on the Fly River to as far east as the Owen Stanley Range; but it is still unknown to the north-east coast, and was, until quite lately, not grown on the islands. Very high rates have been offered in the market for the unmanufactured leaf. Like the coconut, it is a cultivation well known to the great majority of the natives, and it is a healthy and long established production of the country. It presents a very favourable opening for enterprise.

Rice has been grown by the Sacred Heart Mission on a small scale, but sufficient to show that it thrives and bears admirably. For swamp rice, or for any other wet growing crop, there is a great field in the colony, for it contains more than enough of swampy land of all kinds.

It seems very probable that sago could be manufactured profitably by establishments erected on the Lakekamu, Mambare, and Kumusi, and perhaps at other places. Native-made sago would would not be suitable for refining, because it is often prepared with brackish water, and is never rewashed. Sago-making apparatus would have to be erected as far up the river as possible, on account of the supply of fresh water. This also would be an industry that would be readily understood by natives.

Land suitable for growing sugar-cane on a lage scale could certainly be had at several places. As a very great variety of sugar-canes has been cultivated from time immemorial by the natives, all over the Possession, this plant is thoroughly at home there, and clearly grows to perfection. As the country is not troubled by hurricanes the chief danger to guard against would be from floods, a contingency that should be borne in mind in selecting land. No doubt a considerable amount of local labour could be obtained for growing cane and manufacturing sugar, but probably it would be advantageous to have a permanent nucleus of more skilled labour in such an establishment, from India or elsewhere. There are strong racial and economic reasons against the introduction of those peoples into Australia, but these do not apply to British New Guinea, which is not, and never can be, a white man's colony in the same sense as Australia.

It is said, however, that the sugar to be grown in Australasia this or next year will suffice for Australasian wants. If this is so a further extension of the sugar-cane industry in that part of the world neces-

sitates looking for a European or American market. British New Guinea, free from hurricanes, with land for next to nothing, with local labour and convenient access to shipping, should be able to compete successfully on even terms with any other place, either for the Australasian or other market. It seems to be more a question between cane and beet sugar than between New Guinea and other colonies that grow sugar-cane.

The central district would seem to be specially suited for growing cotton. It is a dry place, the rainfall probably varying from 40 to 60 inches, and cotton seems to thrive well there. It would be tedious, and quite unnecessary, to pursue further all the different kinds of cultivation that could be followed in the colony. Practically, anything that can be grown in a tropical country could be grown there, so great is the diversity of soil, elevation, and rainfall.

It may be stated, shortly, that there are traders enough in the country already for all the present products. What is wanted now is the man who will raise new products, or extend the range of those already existing.

To facilitate this the labour law has been made as little onerous as possible. The natives would probably expect from 4. to 6d. a day with food and lodging. No forced labour or levy of labour can be granted by the Government, the policy of which is to leave labour matters as free as is practicable in the present condition of the native; but, as already mentioned, every reasonable encouragement would be given towards employing the men in their own country, it being clearly advantageous for them on social, political, and economical considerations that this should be done. The colony has no preferential trading relations—is, in fact, debarred from having such; and it has not granted, and probably would not grant, any monopoly or exculsive privileges to any individual or Company.

The tariff of customs dues is comparatively light. Machinery and building materials are free, and the same may be said of shipping gear. Necessary articles of food are free or are very lightly taxed, like rice, for example, at 10s. a ton, sugar at 2s. 4d. a cwt., and tea at 2d. a lb. Much trade tobacco is used in paying native labour, and the duty on that article is 1s. a lb. On hardware and drapery the duty is at the rate of 10 per centum ad valorem.

Of the rainfall it may be said that in the central district, near the coast, it is the lightest, apparently from about 40 to 80 inches; while in the east and west it rises to 120 inches, or more in some places.

Land can be bought only from those already holding it by Crown grant, or from the Crown direct. If sold subject to reasonable improvement conditions the price need not exceed 2s 6d an acre. If alienated by the Crown without conditions, the minimum price per acre is: For agricultural land, 10s; for pastoral land, 2s; for trading or fishing purposes, £5; for coconuts, 5s.

It is advised that any person or company contemplating taking up any industry in British New Guinea should begin by first of all visiting the country, or sending some person there to do so, in order that a competent and thorough examination should be made on the spot before money is sunk in any undertaking.

The Government certainly cannot in any way indemnify any person who may suffer from any enterprise he may enter into there. In a new country like British New Guinea it would be a real calamity if private enterprise should turn out unfortunately. The fitness of the place for any particular industry should, therefore, from all points of view, be well determined beforehand by a competent independent authority. The best plan would probably be to send an experienced planter to examine and select land, and to consider all other matters carefully on the spot before commencing any active operations. If such a person is sent there, and really means business, the probabilities are strong that he will obtain what he wants, and that, too, in districts where life and property would be as safe as it is in this city.

LIPTON AND TEA IN AMERICA AND CALCUTTA.

Mr. Lpiton's principal tea-buyer in Calcutta having been detached to America to push the new tea selling business commenced there, a telegram has come from London intimating that it is indispensable Mr. Duplock should attend the opening tea sales of the season in Calcutta. Mr. Duplock leaves on Wednesday next and will be away six weeks, perhaps.

PROSECUTION FOR SELLING IMPURE COFFEE.

At the Bradford West Riding Court, on Monday, Christopher R. Hill, grocer, Briggate, Shipley, was summoned for having sold coffee that was not of the nature demanded. Inspector Randerson, one of the West Riding County Council officials, stated that on March 15th he received instructions to visit the defendant's shop and purchase various articles. He did so, and bought, amongst other articles, a pound of coffee, for which he paid 1s 8d. When he had received the goods he told the defendant's wife, who had supplied him with them, that they were for analysis. She then said, "I did not know they were for analysis, or I should have given you pure coffee." The witness found no label to indicate that what he had bought was a mixture. The coffee was weighed for him. Mr. Peel: You did not say pure coffee—you simply asked for one pound of coffee? Inspector Randerson: Yes. The witness added that he did not see the canister, and did not see what words were on it. Inspector Quinlan stated that on March 15th he asked Inspector Randerson to go into the defendant's shop and make some purchases. As soon as the transaction was completed he entered the shop, and the defendant's wife was told that the mixture was required for analysis. It was not then denied that what had been bought was a mixture of coffee and chicory. The analysis showed that the mixture consisted of 50 per cent. of coffee and 50 per cent. of chicory. The defendent, in answer to the charge, said he bought the business in November last, having had no previous experience of the grocery trade. When he took the shop over the valuation included a small quantity of coffee, between three and four pounds and the coffee that was supplied to the inspector was taken from this. He did not know that the mixture had been sold to him as impure coffee; it was sold to him in the valuation as coffee, and the canister containing it was marked "coffee." He sometimes attended to the shop, but generally his wife looked after it. He did not think she knew that the article supplied was impure coffee. The chief business done at the shop was in groceries and provisions. He sold a quantity of tea, but practically no coffee. In answer to the bench, Inspector Quinlan said the shop was a very old-established one, and was situated in the main street of Shipley. It was a busy shop, and one of the finest in that particular district. The defendant, however, said that where one person passed along the side of the street where his shop was situated a thousand passed on the other side. The shop, including a house, was rented at only £19 10s. Mr. Peel: It cannot be very large for that. In reply to further questions Inspector Quinlan said that the cost of chicory was from 6d to 8d per lb. at the outside. The price which he had paid for the coffee—1s 8d—was a very good price. The defendant was ordered to pay a fine of 10s and costs, the alternative being ten days' imprisonment.—*H. & C. Mail*, May 3rd.

Correspondence.

To the Editor.

CEYLON PLANTATIONS AND THE LABOUR QUESTION: THE VIEWS OF THE CHAIRMAN OF THE PLANTERS' ASSOCIATION.—No. I.

Relugas, Madulkelle, Ceylon, May 11th.

SIR,—A time when every planter is as busy as he can be, and when every one has as much as, or more than, he can do to keep up with his flush, seems a very unfavorable moment, to open a discussion on the labour question. If coolies are as scarce all over the country, and coast advances universally as high, as some of your correspondents indicate, the question is, certainly one of the greatest importance to the planting community. Nevertheless I submit that its consideration by the P. A. should be delayed a short time until members have a little leisure to consider it.

It is all very well to come down with a cut and dried scheme to bring fresh coolies into the country for those who want them; but the N.D.P.A.'s scheme has been launched without any attempt in the first place to justify its existence—in other words to prove the preamble; and it entirely overlooks the two points which are in reality the *crux* of the whole question. These are (1) How is a planter who has imported, say 100 coolies, through the agency to ward off the attacks of his neighbours' kanganies on his new force? and (2) How are coast advances to be reduced in amount?

Coolies can be got, and are now being got, from the coast by many and at fairly reasonable rates of advances—at all events cheaper than as a rule they can be had from other estates although of course they are not procured so speedily. The difficulty is to keep them. Coast advances in many cases, to my own knowledge, are reasonable and I think the cases of excessive advances, are in the minority. If the Dimbula Association succeeds in getting reliable information on this point a valuable addition to the facts will be gained.

The gravity of the question may not perhaps be disputed, and I wish merely, at the present time, to indicate that reliable evidence of the cause of the evil, and specially of its extent, should first be obtained, and that the past history of the action of the Planters' Association in connection with coast advances and the matter of crimping should be recalled.

The scheme emanating from the N. D. P. A., or rather the rough draft of it now before the public, seems to me to be in keeping with one of the growing tendencies of the time, viz., to get some public body (usually the Government) to do what the individual should do for himself, and I can scarcely believe that the Chairmen and Secretaries of the Central and District Associations would undertake and carry through the onerous duties which that scheme would unquestionably entail. The question is by no means so simple as the extraordinary rapidity of production of a scheme to solve it would indicate. No amount of recruiting will bring coolies in quantity except at certain seasons (unless with an enormous expenditure in advances). The planter (call him ignorant of cooly customs, or what you will) who (by the scheme) should send his order through the agency in January so that he may have plenty of coolies in March, April, May, would, as at present, find that he could not get them and would cry out as loud as before. But if by some chance he did get them, he would probably want to pay them off again in July, August and September or be reduced to working three days a week.

I reluctantly come therefore to the conclusion that the importing of new coolies from the coast is best left to the individual or group of individuals short of labour, while past efforts of the Association scarcely augur well for the putting down of crimping and the moderating of coast advances. Still, there is no need to be hopeless and a little more light thrown on the problem may show a solution of the question.—I am, &c., A. MELVILLE WHITE.

MR. CHAS. YOUNG'S OPINION.—No. II.

Nuwara Eliya, May 11.

DEAR SIR.—I see that the labour question and that of advances are once more agitating the Planting Community; but the S.-W. monsoon will soon be on, and the rush of leaf over, and the excitement will cease *for a time*, leaving the planters sadder and poorer, the coolies a few hundred thousand rupees more in debt, (which most of them have no intention of paying by honest work), and the kaddie-keepers so much the richer and more jubilant; and I can see no hope for any improvement as long as the present wholesale system of crimping goes on.

Now that the Tea enterprise has reached that stage that we can pretty well gauge our future production, and therefore our labour requirements, I do not think that there is much fear of any serious scarcity of labour in the Island, for I think we have nearly enough resident coolies for our general requirements, and this force is being annually increased by births, so that we are not nearly so much at the mercy of a yearly influx of Coast coolies as we were in days of old; but the cooly of the present day won't work and you may fume and rage and see all your fine flush being wasted on the trees, but you cannot get ¾ of your labour force out to work, in many cases not more than ½. What cares Ramasamy for the angry Dorie or lost leaf? He has just secured a fresh advance out of his helpless master and so renewed his bazaar credit, and he is now going to take his ease, till the next rush of leaf is on, when a further advance or his tundu will be calmly asked for; and if his Dorie won't give way any longer to this squeezing, Ramasamy will go to his next door neighbour and *get the money*! Now, sir, it is in my opinion not so much the scarcity of labour, but the idle ways of the present cooly that is our great trouble, and I do not think that matters will mend until the present wholesale system of crimping is stopt.

In my younger days when labour was far and away scarcer than now and most planters annually lost crop from want of coolies, one would as soon have thought of picking his neighbour's pocket as attempting to crimp his labourers; it was a generally understood thing throughout the Island, that you were not to take on other estate coolies without finding out from their employer that all was fair and square about their leaving. Why can't the planters of today act by each other as they did in days gone by ?. There is no greater scarcity of labour now than there was then. No doubt the country bred cooly of today is very different from his brother of old, but this only makes it the *more necessary for Planters to stick to* and be *true to each other*, and they will find their lives much pleasanter than the present most unsatisfactory state of affairs; for if they will not help themselves, no one else can help them.

The Planters' Association and the Chamber of Commerce, as has already been proved, can do nothing; they can only advise. The planters of each district should combine among themselves not to crimp each other's coolies, and although some may not agree, that should not for a moment debar the majority from joining together and registering the names of the estates that join, and if there is any disagreement let two planters be appointed to arbitrate.

What are the District Associations doing in this all important matter? They are all constantly meeting and passing unanimous votes to press Government to give them a Railway, a Road, or an Hospital, and quite right too, but why cannot they meet and pass equally unanimous resolutions in a serious matter like this, the worry of which I am sure goes home with them daily and spoils the very night's rest of many of them.

Another way to help in the matter I think would be for each estate to start a bazaar of its own and the superintendent to see that the coolies get all their requirements on the spot at a moderate price, and keep them as much as possible out of the hands of outside harpies, in the shape of Chetties and kaddie-keepers

In conclusion I do not for a moment recommend any check to recruiting from India. Most certainly this should be attended to, but I believe the real trouble is at home and at our own doors, and it can only be put an end to in my opinion by the planters themselves—Yours faithfully, CHAS. YOUNG

CEYLON PLANTATIONS AND THEIR LABOUR SUPPLY.—No. III.

SIR,—I see some of your contemporaries keep up the good old rule of "going one better" than the old *Observer*. It is a sporting way of looking at matters; but I prefer, myself, to see things judged upon their merits: and when I see half columns of editorial wisdom expended on the above-named subject, and all laboriously proving that the *country* has *developed* since Sandy Brown's time, and that the *Observer* is "out of date" because he "dwells" on what planters of that time thought about this cooly question, I really do not think the matter *is* being judged upon its merits. The point wanted to be settled surely is not whether the country has developed (even the benighted *Observer* can be brought to admit that, although, of course, he has been an enemy of development with his handbooks, &c.); but whether our dear friend Ramasamy, on the point in question, has developed. It is all very well to despise the wisdom of our dead Sandy Browns; but there may be some of his practical stamp living, and it may be that they will despise this irresponsible nonsense about "development." The "Times" would do well to think a little before it tackles this labour question. When it has done so, it will probably conclude with me that the foundation upon which Ceylon plantation labour supply rests is the same as of old. It is, namely, that kangani system which, with all its faults (and some of them may be remediable) has outlived *all other systems*, agencies, and all, and is today the only means of cooly immigration. On that point Ramasamy has not developed one iota, and will not. To find remedies for the evils of the system, to open up new fields to smooth his path upon his own lines must be our task; but let us get rid of the "development" theory, for, in all points essential to enticing him on to our tea estates, Ramasamy, to all practical ends, must be taken as the same yesterday, today and for ever. And a good thing for us that it is so!—Yours, &c., "OUT OF DATE."

No. IV.

May 12.

DEAR SIR,—With reference to the correspondenc which has recently been appearing in your columns, I think the experience of any planter who has *appreciably* increased his labour force during recent years, through sending money to the coast by a kangany, would be highly interesting.

So far as I can judge this system is now reduced to a farce, and the sooner the fact is recognised by planters the better. After having squeezed what money he can out of a superintendent a kangany departs for the coast full of promises. When it suits himself, he returns with a few relatives and dependents, but in all probability without a single *bona fide* new coolie.

What then remains for a superintendent to do but take on local labour at a high rate. Although the dolicy is a suicidal one in the long run he at least gets something for his money in the meantime.—I am, &c., A CENTRAL PROVINCE PLANTER.

No. V.

May 14th.

SIR,—Mr. Charles Young deserves the thanks of the whole planting community for his admirable letter. The present position of matters could not be more accurately portrayed. His diagnosis is as perfect as, I have no doubt, his remedy would be effectual. Planters have only themselves to thank for the present state of things, and if they would all agree not to employ nor to allow to be employed on contract, work a single coolie who could not show his written discharge from his last employer the labour difficulty would disappear in three months, and the coolies would be taught that they are no longer masters of the situation as they certainly are at present.—Yours faithfully,

CUSTOS.

No. VI.

Gampola, May 14th.

DEAR SIR,—May I again add my humble item in *re* the "Labor Difficulty." If agencies are to be appointed you advocate agencies carried on by Companies, such as the "British India Company" and Mactaggart & Co., established in Tuticorin; and throwing cold water on agents generally, cite failures of years ago: others eliminate the kangani system from the question; and two agents are already in the field offering their services on commission "per capitem": The Northern Districts Planters' Association propose an agent paid R3,000 a year plus commission "per capitem", also ignore the presence of a kangani by advocating "the appointment of one of the gang to act as kangani and be put in charge of the consignment for which he would receive commission &c." Now the above are the very causes of the failure of the agency system. The agent *must not reside* at Tuticorin; he must be located centrally in the Coolie Districts and personally superintend the recruiting of coolies, the recruiting to be instituted by private enterprise and the agent appointed and instructed by a "Labor Intelligence Committee" formed by members of such private Company of Planters, with or without the support and recognition of the Planters' Association. *No commission "per capitem" must be paid.* This would only lead to recruiting promiscuously and hurriedly. The agent must be an experienced Planter who has an interest in the recruiting of suitable coolies, and whose work shall reflect credit on himself. It is very easy for a Company or agent and sub-agents to collect from the "highway and byeways" gangs of coolies and send them across to Ceylon on commission "per capitem," who, on their arrival on the Estate for which they are consigned, find that their relations and friends are stationed on other Estates, and by driblets drift away to their friends leaving the kangani to mourn the loss as sole representative of, and security for, the advances. The coolies must be recruited by a kangani belonging to the estate which finds the advances, in those villages, in which the friends and relations of the coolies already on the estate reside; supervised personally by the agent. Without the tie of relationship cooly advances and recruiting are a farce and *must fail.*

By all means try further north into fresh fields and obtain an entirely new connection which may or may not prove a success, but certainly the "devil one knows is better than he whom one knows not." C. W. T.

No. VII.

May 15.

DEAR MR. EDITOR,—I see letters appearing again in your paper on the subject of labour. I am afraid all the writing in the world will have no effect. I am just going to give you an instance of the way some planters in Ceylon manage the labour question. I had occasion some time ago to pay off a head kangani of mine. A few months afterwards I saw him about and cautioned my kangani about him, and that he was on the crimp. A short time elapsed when a kangani of mine came and wanted to be paid off as he said his men wanted to go to the coast. But I told him that that was a lie, but that as I always paid a man off at once if he wished to leave to come at 4 o'clock and I would settle his account. This I did and gave him a paid off toondoo, believing he was being crimped by my old head kangani. I wrote on the paid-off toondoo "If this kangani should present this to the Superintendent of *such and such* an estate (naming the estate) would the Superintendent communicate with me?" never dreaming for one moment that any planter would take on any labour without seeing his paid off toondoo. But anyway, in this case—these crimped coolies (about 20) of mine were given work, and the paid-off toondoo never asked for. This is the curse of the labour question. If men will act in this way, well, coolies will get like their masters. No planter should take on any coolies without a proper paid-off toondoo, and if you wish to make any remark about the Kangani write it on the

toondoo, and then whoever takes these coolies on, does so at his own risk. By working thus we should soon get rid of those scoundrels who go round getting high advances. I heard a case the other day which certainly opened my eyes. I made a remark about the dreadful state of things the advance system was coming to, and a reply was made to me:—"Yes, and it will get worse. Why fancy so and so actually likes to have his coolies with large debts, for he thinks this keeps a hold over them." This I am sure is true and if men act so, nothing will ever put a stop to this wholesale crimping and large advances.

As for the Planters' Association it is very good in its own way, I daresay, and would be more so if some fresh blood was allowed to enter in; but under the present mode of working, it would take fifty years to get over the first preliminary points—too much talky-talky.—Yours, &c. X. Y. Z.

No. VIII.

DEAR SIR,—I believe that the Ceylon Planters want a number of Indian coolies for their Estates. Would you kindly place me in communication with them and oblige.—Yours faithfully,

ALEX. M. TRUTER.

No. IX.

SIR,—At this time when the "authorities" are taking up the sticks upon this all-important subject, I would venture to suggest that you should re-produce Mr. Wilson-Wood's letter on the subject which appeared either in *Observer* or "Times" or both (about September?) last year. It is a deliverance very much to the point, and should, *inter alia*, be duly considered, for the simple reason that no point can be of more importance in this puzzle than the point as to the financial basis upon which the Advance System rests.

If Mr. Wilson-Wood's theory is sound, cooly immigration carries with it its own guarantee of stability, and, as Mr. Chas. Young more than suggests, the chief drawback, so far as planters are concerned, that the system suffers from, is the suicidal policy of "beggar my neighbour" which so many, in these latter days, regard as wisdom!—Yours, &c.,

AWAY WITH THE CRIMP.

No. X.

May 15.

DEAR SIR,—Your correspondent from Dambadeniya shows a full and practical knowledge of the coolie districts, but he makes a mistake when he refers to the number of resident coolies. *Resident* in *my* sense of the word, does not include those who journey to and from their villages. 1. It would not surprise me to find in the records of the Immigration Department that so few of the incoming coolies had been in Ceylon before. My words were "These know not the country of their fathers." I must further disagree with "Planter" when he says that it is a bad sign to find so few entering Ceylon who had been there before. That proves that many remain never to return.

In continuation of my former letter I would wish to narrate another successful importation of outside coolies—not into Ceylon but into Mysore. The labour in Mysore is chiefly composed of Eastern (Moodlars) and Ghaut (Naad) Canarese. But on the estate which I was first in charge of, two men from the Shevaroy Hills (Salem) had brought, some years before, a large number of Tamil coolies. My former instance was Canarese brought amongst Tamils. This instance is Tamils brought among Canarese. These Tamils, when their Doraies were burnt out and compelled to leave, chose to stay; and there they were when I was there. Many of them took trips all the way to Salem and Arcot and brought other coolies back with them every year. Besides this there is the whole Telugu country untouched. This is not a case for the Planters' Association. The Chairman has too great a fondness for forgetting the dignity of his position and writing to the Press. It is not a case for any special appointment of a General Agent. Let some of our big Companies send and recruit in the North and their requirements will soon be supplied. There is much in what Mr. Young and others say when they deprecate the cry of insufficient labourers in the country. Short time during the greater part of the year and a squeeze for two months. How is that to be met? I should say by pruning to avoid having an unduely large area in full flushing trim in the months of April and May. Now I come to a very different story indeed. The P. A. comes in here and serious steps should be taken. Mr. Young, one of our chief V. A.'s and a prominent Planter, formulates a terrible charge against his brother planters in his letter of May 11th. I cannot say I have found crimping to be so rampant. I have known Chetties and Kaddie-keepers put pressure on gangs in order that the Kangany should again put pressure on the Dorai for more money—failing receipt of which the Kangany demands his tundu and refuses to stop. If the tundu is once issued the writer of the tundu cannot complain if another planter in his sore need and trouble hails the arrival of the tundu-bearer as a heaven-sent messenger. We cannot cry out if the wretched harassed recipient joyfully pays the amount of the tundu and *something more besides*. That is not crimping. We must halt and examine the meaning of the word. Mr. Young may have come across, as he seems to have done, numerous instances of crimping. He should show the men up. In Mr. Young's younger days (no pun meant!) which he refers to in his letter, he had no "tundu" system in vogue. Gang's were held together by the cohesive force of blood-relationship and village-ties, rather than, as at present, by the wretched bondage and slavery of Chetties' extortionate agreements. Thus coolies owed allegiance to but one master and he was a fair Britisher, instead of, as now, a host of greedy remorseless extortioners. The remarkable rareness of Tamils repudiating their advances speaks well for the natural honour of the race; and I think it would be better that such cases, as that of Mr. Sinclair, never reached the Courts; because they simply open the eyes of the canganies to the weak points and flaws of our laws. If we kept our checkrolls here as they do in Mysore all danger of undergoing Mr. Sinclair's experience would be at an end. The checkroll would be ruled like this:—

Total debt from last month.	Amount pay this month.	Total amount of rice and cash advances	Balance debt.

Thus except to a few coolies, there would be no pay-day. You could start by ascertaining and settling each coolie's indebtedness to the cangany, each sub-cangany's indebtedness to the head cangany, and all the debts could be put against either the pay list or weeding contracts. Then mooteries could be signed beginning with the head cangany downwards. Then every month fresh advances would be issued and carried on, and by this means, except in a few instances, there would never be a pay-day, never any pay-due, no extortion by the canganies and perfect safety from the uncertain humours and conflicting judgments of our Supreme Court Judges.

ABERDONENSIS.

No. XI.

SIR,—I quite agree with "Custos," that Mr. Charles Young deserves the thanks of the whole planting community for his letter.

The want of combination amongst us seems to be the great cause of the rise in the rate of coast advances. If districts, or groups of estates even, combined, and engaged not to take on coolies from each other, without thorough enquiry from the last employer, the power of the kanganies to raise advances would be checked. I do not think any one can help noticing how many tundus are to be seen, just before a busy month, such as April. It is certain that the planter does not give these tundus of his own free will, but the kanganies give notice, because they can get better terms elsewhere, and the employer is obliged to give a tundu to save his advances.

The kanganies with large advances are not blind to their own interests, and do not want to bring fresh labour from the coast, and for my own part I would never advance money to send to the coast, to a kangany who was heavily indebted to me.—Yours faithfully, 20 YEARS' EXPERIENCE.

No. XII.

Talawakele, May 17th.

DEAR MR. EDITOR,—I have just read your very emphatic article in your issue of the 16th and must say, I feel you are still uninformed, on the great vital question—our life and blood—the Labour Supply of Ceylon. I have more extensive knowledge than you and all your correspondents, if past experience can count for anything. I have opened more acres of Ceylon in coffee and I am inclined to think, even in tea than all your correspondents. Forty years experience should entitle a man to have an opinion of his own.

Scarcity of labour has from time to time, for these 40 years occurred periodically, but the receding wave has returned the following year and more than made up for the great vacant sand beach, covering it over with a surplus till most estates could only give 4 days work a week. An occasional famine in India has often filled our ranks to overflowing and will again (although I pray not). Mortgagees ill-treated coolies, in the dark days. Many had to go home unpaid and the stream of immigration, was stayed and has never been perennial since.

As our wants have increased, so has our morality decreased, the "tundu" system has come in. A more vile and corrupt practice, never existed among honest men in any country. It originated in the dark days of coffee depression when planters desired to get rid of their indebted surplus labour and has grown and magnified, until every rascally nefarious kangani considers himself greviously wronged if you happen to offend him. Should you refuse his request, he demands it as a right, let his indebtedness be ever so great. Chetties and usurers are deeply involved in this species of blackmailing, which flows and ebbs, according to needs and wants. Just now it is decided, and persistent. I know a case, where a tundu kangani demanded R50 a head for his gang besides I know there is a system come in professionally; where lazy scoundrels wander about and offer 3 or 4 coolies at R20 a head, needy men give it. They work as little as they can for a couple of weeks, or so and bolt to a distant part of the country and dupe some other needy man. The Chetty does not get his interest "in" on Ramasamy's big debt, because master has not paid or is not farther squeezable. So says the Chetty,—"Get a tundu, I can put you in the way of getting the needful plus my interest." so on, and so on. We get deeper into trouble, when labour is scarce. Demoralization, vileness, cupidity and all manner of abominations are creeping into our system!

Now say you. "Give us your Panacea for all the ills you mention"?

Here it is: "let not another tundu be written" by any planter in Ceylon, let Chetties suffer, let Kanganies "squirm" in their own vileness, till they again become honest men, who, trust to their own, and coolies' industry to work off their debts.

Let the law say:—every honestly paid advance, to kanganies and coolies shall be honestly wrought off in honest labour, for which it was in all good faith given, or repaid in sterling money, not however obtained on the "tundu" system. In a few years as in olden times we would be surrounded by honest kanganies, not "restless vagabonds" but permanent good servants, as of 30 years ago.

Let every planter look to India as his field for recruiting. Any planter having to pay off a gang, give them a writing to the effect he has done so, and let them look for employment, as all honest workmen have to do. Ten years ago I wrote to a leading planter (F. W. L.) asking him to bring the "tundu" system before the C. P. A. as I then saw the thin end of the wedge was introduced, of all the rascality since sprung from it. I have used it myself, but never have had an idea of it as a door to every evil the labour system may be surrounded with. All honest men must feel the truth, of what I have written, then why perpetuate a system so fraught with crime. Let it be banished for ever, now, and hereafter, and the very word and name be deleted from every honest planter's "Tamil Vocabulary."—Yours faithfully,

AGRICOLA.

CEYLON TEA IN AMERICA.

SIR,—Though by no means an upholder of the Tea Cess, yet seeing that we are perforce obliged to pay it, it behoves us to at least try and get the best value for our money, and I think Mr Mackenzie's letter shows us how this can be done namely by judicious advertizing. I am quite prepared to support that part of his scheme, but I must emphatically protest against any more of our hard earned money being spent in supporting canvassers in America whether ex-planters or others. We have of late heard rather too much of certain gentlemen now in America, who appear to have constituted themselves into a mutual admiration society. Their object is laudable enough, to make an honest living, but I very much doubt if the results to be obtained by employing them will be at all commensurate with the expenditure necessary, and were the bulk of Ceylon proprietors consulted, I believe they would be found to be of my opinion.—I am etc.,

PROPRIETOR.

THE RESTRICTING OF TEA PRODUCTION.

DEAR SIR,—The efforts of some planters to create a monopoly of tea production are rapidly approaching the ridiculous and we may shortly expect to see a series of resolutions passed somewhat as follows:—By the Dimbula Association (who have all the land they want):—"That owing to the danger of overproduction Government put a reserve of R100 on all land for tea." By the Kurnegoda Association (who have plenty of Sinhalese labour):—"That owing, etc., Government put a tax of R10 on all immigrant labourers landing in Ceylon." By the Hapushima Association (a young district with good soil) "That owing, etc., Government put a tax on all manure imported." By the Muttegama Association (who have got their railway!) "That owing, etc., Government make no more railways to young tea districts." By the Kalutotte Association (who have water transport) "That owing, etc., Government raise the railway rates on tea and manure." And so on. There is far more danger of increased production by manuring and introducing more labour which will take effect at once than from increased planted acreage which cannot affect the market for some years and which withdraws labour from the manufacture of tea in the meantime.—Yours truly,

B. B. B.

JAVA CINCHONA COMPANIES.

The annual general meeting of shareholders in the Western Java Cinchona-growing Company was held in Amsterdam on April 25th. The directors, in their annual report, mentioned that the Tjiloerian estate had been handed back to the Government, and that another plantation, Bajabang had been sold to a Dutch-Indian syndicate. The company received from its estates, in the course of 1894, 2,739 bales (205,000 kilos) of cinchona-bark. In 1893 the receipts were 2,137 bales (171,000 kilos). Besides cinchona, the company grows coffee; but at present the yield of that crop is insignificant—only a few hundreds of pounds. The total number of trees on the company's two plantations is 1,156,931 cinchona and 260,600 coffee trees. The average selling price of the company's cinchona in 1894 was 3.91c. per unit; in 1893 it was 3.83c. The year's working shows a profit of 21,614f (about 1,800*l*), the greater part of which goes to redeem the loss on the operations for 1893, leaving a net profit of 10,727f. (about 900*l*.)

THE AMSTERDAM DRUG-MARKET.—The Java Cinchona bark auctions, which will be held in Amsterdam on May 9th, are composed of 5,902 bales and 276 cases, weighing in the aggregate 517,823 kilos; the manufacturing-bark represents 26,705 kilos of sulphate of quinine, being an average of 5.10 per cent.

LIVERPOOL, April 25th.—Kola nuts continue to meet with a ready sale; 40 bags sold at 10d and 15 bags at 11d, while prime dry are held for 1s 3d per lb.—*Chemist and Druggist*.

TEA CULTIVATION IN THE CAUCASUS.

The following information on the subject of tea cultivation in the Caucasus is extracted from a report to the Foreign Office, dated the 16th October, from Mr. P. Setevens, Her Majesty's Consul at Batoum:—

The tea plantations at Chakva, near Batoum, belonging to Messrs. K. and S. Popoff, tea merchants, of Moscow, have been considerably extended this year under the supervision of the Chinese tea planters, who were brought over in 1893; a large number, about 600, natives of the Caucasus, are also employed in working on the plantation of this firm.

In a letter to the "Caucasian Agricultural News, Mr. A. Solovtzoff, who for several years past has been cultivating tea on his estates at no great distance from the lands belonging to Messrs. Popoff, gives a somewhat interesting account of his experiences in the raising of this plant since the year 1884. He states that at that time his chief concern was the question of procuring tea plants for planting, he feared to order seed lest old seed should be sent, besides this the seed of tea contains a volatile oil in considerable quantity, which, during a long voyage, would be likely to evaporate, and thus the seed would have been rendered sterile. Even the seed raised at Chakva requires the greatest care and attention, as excessive dryness deprives it of the oil, and too much damp causes it to rot.

Eventually, however, he succeeded in obtaining a few plants, which arrived at Batoum in the month of July, 1885, together with some seedlings; the condition of both left much to be desired, as they had received but little care and water during their transit, and were to a great extent damaged by the Customs authorities, who used quicklime for the purpose of disinfecting them against the importation of phylloxera, They were, subsequently, transported to Chakva, and with as little delay as possible planted on his property; at first they grew badly and all the shrubs dried up, but some of the seedlings took, and from these he was able to develop his plantation.

The land chosen for the plantation was a red clayey soil, dressed with a thin coat of manure composed of thoroughly rotted leaves and branches, &c., that had fallen from the trees; after clearing away the manure the land was dug up for a depth of about 21 inches and the top soil was worked to the bottom.

The seeds ripen in the course of a year and are gathered in the month of October, at which time the plant also flowers. The seeds, after being collected, are strewed with dry sand and are kept in earthenware vessels. In March they are damped with a solution of camphor, spirits, and water, in order to force their growth. The seeds are left damped with this solution for some hours, and are then put back into the earthenware vessels, after being mixed with damp earth, In this earth the seeds begin to shoot up, and they are then transplanted into the nursery beds, the soil of which is the same as that of the plantation, but which has a certain proportion of sea sand admixed for the purpose of rendering it more friable. The seeds are sown at a distance of 3½ inches apart at a depth of 1¾inches. As soon as the young shoots make their appearance above ground it is necessary to cover them over with mats in order to protect them from the excessive heat of the sun, but this protection should be removed in rainy weather and at night. In dry weather the young seedlings have to be watered once a day, and under this system of cultivation it is found that every seed comes up; mole crickets, however, create great havoc among the seeds. These insects, Mr. Solovtzoff says, are the only enemies of the seedlings with which he has to contend, and they are most difficult to deal with, although it would appear he has found means whereby the ravages caused by mole crickets may be minimised. The methods which he adopts to attain this end are, the annual removal of the nursery beds to fresh ground, and the burying in the nursery beds, in a line with the burrows of the crickets, of grains of Indian corn boiled in a solution of arsenic, or, what is still better, a solution of corrosive sublimate.

The propagation of the tea plant by means of cuttings should be avoided, as a large proportion of the cuttings do not take, but the chief objection is that those that do only produce very weak plants.

Now that he has an almost unlimited supply of seedlings, Mr. Solovtzoff intends transplanting only the stronger ones into the plantation. The seedlings remain in the beds the whole year, and are then planted out 4 feet apart from each other.

The only attention which the plantation requires is that it should be freed from weeds twice a year. For the first year the young plants should be protected from the rays of the sun by branches of trees. It has not yet been found necessary to artificially water the plants in the plantation. Up to the present, pruning, with a view to increasing the crop of leaves, has not been resorted to, as the chief object has been to obtain as large a quantity of seed as possible for the multiplication of the plants. No manure has been used hitherto, but when planting out the seedlings this year it was intended to manure the soil with timber ashes and refuse from oil mills.

During the dry season, May and June, when the heat is very great, the grown up plants stand the climate very well, but as mentioned before, the young plants have to be protected from the sun. The winter of 1892-93 was exceptionally rigorous, the frosts being as severe as 6 degrees Reaumur, but neither the grown up plants nor the seedlings suffered in any way, although the latter were, for several days covered with snow up to the very leaves. This result is particularly gratifying when the fact, that the very young seedlings are planted in a quite open and low-lying plain fully exposed to the wind, is taken into consideration, and when subsequently transferred to the plantation do very well.

The plantation covers about 5 acres, and as planting has been carried on as seed has become available, it contains plants of all sizes, ranging from 5 years to 1½ year's growth. The number of plants was 5,150, and about 8,000 seedlings were to be planted out during the present year, there is a sufficient quantity of seed in stock to raise 40,000 more seedlings, and the quality of the tea (Thea Viridis) is said to be good.

It is also reported that about 43,000 acres of Government land in the neighbourhood of Chakva have recently been purchased by the Department of Crown Estates for the purpose of turning them into tea plantations, and in connection with this, the above Department has ordered a Commission which will include the Inspector of Imperial Domains in the Caucasus, to proceed, at the end of this year, to India, Southern China, and Ceylon, with the object of thoroughly studying the methods of tea culture in those countries.—(*No. 1481, Foreign Office Annual Series.*)—*Board of Trade Journal.*

THE GREAT WESTERN TEA COMPANY OF CEYLON, LIMITED.

A general meeting of the shareholders of this Company was held at the office of Messrs. J. M. Robertson & Co., the Agents and Secretaries, today when the following report of the Directors was submitted:—

Your Directors submit their annual report and accounts for the season ending 31st March, 1895, which are of a satisfactory nature.

The yield of Tea during this period has been 372,233 lb., which is 27,001 lbs. over the amount secured for the previous season; and the cost f.o.b. in Colombo is 29·49 cents per lb., including 3·40 cents per lb. expenditure on manuring.

After estimating the unsold Tea at a safe valuation, the amount realized for this product is R231,420·82, which is equal to fully 62 18 cents per lb., showing a net profit on the cultivation of about 18 cents per lb.

An interim dividend of 5 per cent for the half-year ending 30th September, 1894, amounting to R29,200, was paid on the 19th October, 1894. The sum now available for distribution is R92,202·27; the profit for the year representing 21 per cent on the Capital. The Directors recommend that the available amount be disposed of as follows, viz.:—

Depreciation—Buildings 10 per cent on R21,443·12	=	R2,144·31
Machinery 15 per cent on R16,302·04	=	R2,445·30
		R4,589·61
Reserve Fund		R10,000·00
Dividend at 13 per cent		R75,920·00
leaving to be carried forward to the next account		R1,692·66
		R92,202·27

The prospects for the season 1895-96 are favourable. The crop has been estimated at 400,000 lb. of Tea.

Mr. F. W. Bois having left the island on 19th February, has resigned his seat at the Board, and on the invitation of your Directors Mr. Henry Bois has become a Director.

In terms of the Articles of Association, Mr. Dunbar, one of the Directors, retires by rotation; but being eligible, offers himself for re-election.

It will also be necessary to appoint an Auditor for the new season.

Mr. J. C. Dunbar, who also represented Mrs. May Ryan, and Mr. C. G. Ryan, presided and the others present were Mr. T. Mackie (representing also Mrs. Mackie, Mrs. Stronach and Mr. A. Cantlay); Mr. H. Bois (who also represented Messrs. W. B. Baring and F. W. Bois); Mr. D. S. Pace as attorney for Mr. W. Jackson; Mr. R. Davidson as representing Messrs. W. Taylor and R. Collinson; Mr. D. R. Marshall, and Mr. W. Moir as representing the agents and secretaries. Mr. Moir read the notice calling the meeting and the minutes of the previous meeting.

The CHAIRMAN in moving the adoption of the report said it showed an improvement on the previous one, last year's crop being exceeded by 27,000 lb. of tea, while the cost of the tea laid down in Colombo was less than last year, being 29·49 cents as compared with 31¾. The 29·49 cents included 3·40 spent on manure and the upkeep of a large cattle establishment. Their tea had realized 62·18 per lb. as compared with 57½ per lb. last year. The prospect for the coming season was very favourable. He had lately gone over the estate as Visiting Agent and in his report to the Secretary he stated that he saw a considerable improvement in the general condition and appearance of the property since the Company acquired it two years ago. The estimate for the coming year was 400,000 lb. tea. Whether they would continue to have the good prices that they had obtained this past year he could not say, but they hoped for the best. He ought to mention that since the report had been drawn up they had received telegraphic advice from London to the effect that there was R3,100 to be added to the amount realised for tea sold during the year bringing up the amount to be carried forward to R4,800.

Mr. MARSHALL seconded and the report was unanimously adopted.

On the motion of Mr. DAVIDSON seconded by Mr. PACE a dividend of 13 per cent was declared making a total of 18 per cent for the year.

The CHAIRMAN said that according to the Articles of Association it fell to him to retire this year, but he was eligible for re-election and was willing to serve again.

On the motion of Mr. MARSHALL seconded by Mr. DAVIDSON, Mr. Dunbar was re-elected.

On the motion of Mr. MARSHALL, seconded by Mr. PACE, Mr. John Guthrie was elected auditor.

A vote of thanks to the CHAIRMAN, proposed by Mr. MARSHALL, terminated the proceedings.

OPIUM OR QUININE IN FEVER CASES.

The report of the Opium Commission contains expression of an opinion that we think will be open to much criticism and difference of view. In Ceylon, as in all fever-haunted countries, this question must be pronounced of more than ordinary interest. The report referred to, more than insinuates that opium may be quite as efficient a prophylactic as quinine in the treatment of fever. It may perhaps be thought that those interested in Ceylon might be scarcely unprejudiced judges on this dictum. It is, of course, the case that, as a cinchona-growing country, and as one that has suffered heavily by the serious fall in price of this, Ceylon should desire to see the use of the bark extended. At the present time, and at the present rate of consumption, it is little likely that the cultivation of the cinchona tree in Ceylon can be made profitable. Java, for various reasons, mainly of soil and climate, has given this island the go-by in this particular case. Until prices may advance there is no likelihood of our planters here being able to recover lost ground and able successfully to compete with the Dutch Colony in this production of Cinchona bark. Any chance that there may be of this advance in the future, must certainly be largely nullified if it it is to be accepted on the report of the Commission that opium may be used as effectively in cases of fever as is quinine. What we desire in this matter is to hold the balance fairly between the value of the two prophylactics, if, indeed, opium is to be rightly classed as such. Let us for the sake of argument concede that the two drugs may be taken as on a level as regards both their preventative and curative effects in fever. Having for that reason conceded this, we may pass on to consider the further question as to whether, while quinine would be morally innocuous, the same can be said for the use of opium and the other drugs allied in character. Whatever the Commission may report as to the general effects of the use of opium, no resident in the East will deny that it possesses a fascination tending to lead from its moderate to its immoderate use. Even the Commission does not deny the baneful results of the last. And we have in Ceylon numerous cases around us justifying the contention that these follow in all such instances. Now quinine has no fascinating qualities. To most, we should say, it is absolutely nauseous. When resorted to therefore it leaves no temptation to use it save for its immediate curative effect. As regards opium—always assuming for argument that its anti-febrile qualities are equal to those of quinine—the case is entirely different. Once anyone—whether European or native—becomes accustomed to its use, the habit of resorting to it is liable to increase. It is a many-sided drug. Its effects in the earlier stages of use are pleasurable. It soothes the brain and relieves the oft-experienced trouble of insomnia, and in many other ways exercises a seductive influence. And yet what can be more shocking to witness, or more debasing to every good instinct of our nature, than the results of the constant resort to the drug? If for no other reason than this, we should advise people not to

act on the assumption that fever may be warded off or cured as efficiently by opium as by quinine. With the use of the last the cure effected can be attended by no such evil after-consequence. With that of the first there remains an ever present danger. It has yet to be proved, we believe, that our concession that the drugs are on a parity as regards their anti-febrile qualities may be claimed. But we have said enough, we think, to put people on their guard against being led away by what the Commission has reported upon this aspect of the question dealt with by it.

TEA SWEEPINGS; CAFFEINE.

LONDON, May 3.

That exceedingly occupied man, Mr. Christy, favoured me with a lengthy conversation this week. It was my desire to learn his views as to the recent Customs Order on the subject of tea sweepings. Before entering into detail with reference to this, Mr. Christy informed me that a mistake had been made by me when before imputing negligence as to this matter by the India Tea Planters' Association. It was, he said, mainly due to the exertions of Mr. Sighe of that body that the Circular mentioned had been issued by the Customs. He thought with me that there was a need for some better means than now exists for insuring concurrent action between the several bodies interested in this and similar questions, and I understood him to approve of your suggestion that a Joint Committee of these should be constituted by which such matters as this 'tea sweepings' question could be dealt with. He evidently thought that, so far as it goes, the Customs Order was a satisfactory one. It had certainly had the effect, he said, of wholly putting a stop for the present to the sale of these sweepings to continental revampers. He told me that this practice hitherto almost passed belief; that the trade had been carried on in the most unblushing manner, and with little or no attempt at concealment. It was, however, impossible now. When asked by me if the order did not leave it open to the warehousemen to continue their malpractices by not placing the sweepings in the dust box—as I had suggested to you seemed to be possible—Mr. Christy replied that attempts of this kind had been made. The Customs authorities had, however, become so active in the matter that these attempts had now been put a stop to, and he felt secure that no sweepings were now sold that had not been treated as laid down by the law. Mr. Christy showed me a sample of the tea that had been revamped at Rotterdam and sold for food in this market as Broken Pekoe Points. On my remarking that it *looked* all right, he observed that I could scarcely have read the analysis furnished of it and published in the *Tropical Agriculturist.* It was, he said, full of impurities of a serious kind, however fair-seeming it might be to the eye. He did not think, he remarked, that for the present it would be needful to take further steps to guard against repetitions of the offence.

INCREASED DEMAND FOR CAFFEINE AND ITS EFFECT.

"But what I strongly feel," Mr. Christy went on to say, "is that the whole present system of disposal of tea is monstrous. It is monstrous, for instance, that there should be an annual wastage of 400 tons in the form of warehouse sweepings. Nothing can justify this, and the whole value is abstracted from the planters' pockets. It is the practice of rebulking here that is responsible for this waste. It seems to me that the tea planters now have the remedy for this in their own hands if they can only be stirred up to avail themselves of the opportunity. Perhaps you are aware of the fierce competition of the last few days at the Mincing Lane sales. I had the representative of one of the largest tea-broking firms in here yesterday. He was quite hoarse with the shouting he had had to do at the previous day's sales. What is the cause of this sudden activity you ask? It is due to the fact that the caffeine manufacturers have within the last week or so almost swept the markets bare of the commoner sorts of tea. The demand for caffeine is greatly increased, and it is that which is causing the competition at the tea sales. This, of course, greatly strengthens the hands of the tea planters. They have been the victims hitherto of the home traders, who impose upon them charges for interest, and for losses in weight &c. that there is now no reason for. Let the planters at once say they will have no more of these charges and deductions. If they are continued, let it be known they will sell locally, and will not ship home for the dealers to work with. This would at once put a stop to the present bad system and would add largely to the producers' profits. First and foremost the abandonment of the practice of rebulking should be insisted upon. It is this that produces the 400 tons of annual wastage. Let the planters do as I have myself done, accept the Customs statement of tare and tret, and insist on buyers accepting that as the basis for purchasing with all risks upon it. The planters are now quite in the position to make this insistence. The game is in their own hands if they will but see it. I am quite content with the Customs' estimate of weights. Its officers open two or three boxes of a break, and upon the weights in these they make their estimate for the whole break. They cannot be, and are not, much out, and their results would be satisfactory both to the planter and buyer. The latter should purchase taking all risks upon that Customs' estimate, and then there need be no long warehousing charges, nor those for interest as now made, nor for rebulking. The wastage of 400 tons would then disappear. The large London tea agency firms will, of course, oppose my suggestion, but they no longer have the power for this opposition in their hands. The planters can now insist upon the observance of any course they deem best for themselves. Their tea sells as fast as it can be put on the market, and it need scarcely be warehoused at all. Where, therefore, is the ground for warehousing and interest charges? As I have said, a threat to sell the produce locally would bring the Home agencies to their bearings and put a stop to the unjustifiable burdens that have hitherto had to be borne wholly by the planters."

I have endeavoured to reproduce as faithfully as is possible for me to do what Mr. Christy said to me. To one so little acquainted with the practices of the tea trade as I am, it has, of course, been difficult to fully follow all that was suggested and remarked to me. But probably what has been written is accurate enough to place your planters *au courant* with Mr. Christy's views and opinions. The experience of that gentleman is so great, and the soundness of his judgment so highly respected, that much weight is to be attached to these. If I have accidentally in any degree misrepresented these, my apologies are due to Mr. Christy in

advance; but so far as my memory serves me do not think that this has been done, at a events not to any material extent —London *Cor*

THE MAHAOUSA TEA COMPANY, LTD.

The Directors beg to hand you herewith a copy of the Crop Account and Balance Sheet for the year ending 31st December, 1894.

The Crop amounted to 148,287 lbs. (an increase over 1893 of 4,989 lbs.), and this has realised £5,308 0s 7d or say an average of over 8½d (8.59d) per lb.: 1d more than last year.

The expenditure amounted to £3,652 17s 9d (the expenditure at the Estates being R45,844.54, or at exchange 1.1⅝d = £2,602 12s 8d) The average cost per lb was therefore 5·91d.

The profit on the year's working amounted to £1,722 10s 1d, and this, after making an adjustment on account of previous year, and allowing for Manager's Commission, Interest, etc., leaves in Profit and Loss Account a Balance of		£1,642 11 11
Out of this the Directors have paid a Dividend at the rate of 10 per cent. per annum for 6 months	..	607 10 0
This leaves for distribution	..	1,035 1 11
And from this the Directors recommend a final Dividend at the rate of ten per cent per annum, absorbing	...	607 10 0
And leaving a balance to be carried forward of	.. ..	427 11 11

The total dividend paid for the year will thus be ten per cent.

Your Directors have decided to build a new factory on a site at the bottom of the estate, where water power will be available and where fuel will be more easily obtainable. They came to this decision with some hesitation, but it was strongly recommended by Mr. Buchanan, who visited the estate, and by Mr. Milne, the visiting agent. This arrangement necessitates the acquisition of a small piece of land for the new factory site and also permission for a waterway through a neighbouring estate, and as soon as these matters are settled the new factory and turbine will be purchased.

The estimate of crop for 1895 is 155,000 lb., and the estimated expenditure at garden is R43,027.

Mr. BRYANS is the retiring Director, and, being eligible, offers himself for re-election.

Messrs. WOODMAN, TULLOCH and EDDS, the Auditors, also retire, and offer themselves for re-election.

MEMO. OF AREA.

Under Tea Cultivation:

		A. R. P.
In bearing	..	467 1 35
In partial bearing	..	29 1 16
		496 3 11
Udder timber	..	13 0 24
Unplanted (including Forest)	..	100 2 27
		113 3 11
Total	..	610 2 22

THE CEYLON AND ORIENTAL ESTATES COMPANY, LIMITED.

REPORT OF THE DIRECTORS.

The Directors submit herewith the Audited Accounts for the past year.

Short crops were the rule in Ceylon during 1894, and the Company's estates may be said to have done well in giving an output of tea only 4 per cent short of the estimates. With a better market for all grades, the average price of the Company's tea sold in London rose to 9·16d per lb., as against 8.41d in 1893.

As will be seen by the accounts, there has been charged to capital, in respect of new buildings and machinery, the sum of £4,106 6s 11d. This expenditure includes the extention and improvements of Factories at Bogahawatte, Denegama, Peradenia, and part of the cost of the new Factory at Keenakelle.

Renewals and repairs to buildings and machinery cost £691 1s 8d, which has been met out of revenue, and the sum of £500 has in addition been written off for depreciation.

Mr. Thring visited Ceylon last autumn, and returned well-pleased with the way in which Mr. Denison, and the Superintendents under him, have managed and developed the estates since his previous visit in 1892.

An agreement has been entered into for the purchase of Ooragalla estate, a property of some 470 acres, of which 300 acres are planted with tea. This place adjoins Oodewelle, and having no factory of its own, the tea will be manufactured at Oodewelle as soon as the building there has been enlarged and the necessary machinery put up.

Deegalla estate, an outlying division of Nartupana, has been sold for £950, as its distance from the latter place made it expensive to this Company to work.

A third instalment of debentures, viz., 35 bonds of £100 each, was paid off on the 31st March. The debenture debt now stands at £89,500.

The balance at credit of profit and loss Account, after aying debenture interest and all charges, and providing for depreciation of buildings and machinery (as explained above) is £7,668 1s 10d, which shows a satisfactory return upon the capital of the Company. The Directors recommend that this balance be appropriated as follows:—

	£ s. d.
To reduction of Debenture Issue Expenses Account - - - -	3,542 8 2
To payment of the Preference Dividend (less Income Tax) - - -	983 16 9
To payment of an Ordinary Dividend at the rate of 5 per cent per annum (free of income tax) -	2,763 4 0
To carry forward to next account -	378 12 11

The retiring Directors are Messrs. Hugh C. Smith and Charles Arthur Reiss, who, being eligible, offer themselves for re-election.

The Auditors, Messrs. Broads, Paterson & Co., are appointed by the trustees for the Debenture-holders, but are eligible for election by the shareholders.

SCHEDULE OF ESTATES.

Name of Estate.	Acreage Tea.	Acreage coffee	Acreage cocoa and coffee.	Acreage cocoa	Acreage cocoa and tea.	Cardamoms	Forest waste and cheena (approximate)	Total acreage (approximate)
Bogahawatte	540	—	—	—	—	—	78	618
Le Vallon and Rajatalawa	1216	—	—	—	—	—	2363	3579
Denegama (one-half)	155	—	—	—	—	—	69	224
Peacock Hill	300	—	—	—	—	—	192	492
Keenakelle (including Serendib and Keenagashena	500	120	—	100	40	—	745	1505
Peradenia	409	—	—	—	—	—	762	1171
Oodewelle	417	—	—	—	—	—	978	1395
Wiltshire and Hampshire	269	—	—	55	—	3	517	844
Wangie Oya	445	—	—	—	—	—	122	567
Moralioya and Wilton	184	—	—	—	—	—	271	455
Pathragalla	100	—	255	—	30	—	200	585
Narthupana and Deegalla	183	—	—	—	—	—	267	450
	4718	120	255	155	70	3	6564	11885

VARIOUS PLANTING NOTES.

TOBACCO.—The outturn of this staple product of the Peninsula is considered to be above the average this year. The leaves are now being cut and cured, and the merchants will commence their purchases by the end of this month. Last year the Jaffna tobacco fetched the highest price known for several years both here as well as in Travancore. The price of a Candy of tobacco of the best sort was in Jaffna last year as high as R250. But owing to a good crop here, and the large stock remaining in Travancore and Cochin, it is expected that the same sort will not fetch this year even R200 per Candy. —"Hindu Organ."

TEA PLANTERS IN INDIA will be interested to learn that Russia threatens to become a rival in tea growing. The Agricultural Society of Russia has recently taken up the question of tea cultivation in the province of Batoum, and with this object has instructed Mr. Khugen to purchase large plots of land near Charka. Last summer they were examined by Mr. Krasnow, a Professor of Geography at the Kharkov University, who said in his report that they would, if cultivated, compare favourably with the tea plantations of Japan and Ceylon. A party consisting of Messrs. Krasnov, Khugen, and some other gentlemen was to leave Odessa about the end of February and visit the chief tea-producing centres of the world, including, Darjiling, Ceylon, China, Canton and Japan.—*Madras Standard*, May 1st.

RUSSIA AND TEA.

Mr. T. Klingen, "Chief of the Russian Expedition of the Appanages"—in other words of the Expedition to gather information about Tea in the East, has been in Ceylon for some little time, having visited Kandy and Peradeniya Gardens and the Estate Tea Factory and was very much interested in all he saw. Mr. Klingen was not very well afterwards, and has been keeping quiet; but having returned to Colombo, he called on us today and is prepared to run up to Nuwara Eliya and visit some of the plantations in the higher districts before going on to China and Japan.

For the present, he has only a very short time to give to Ceylon; but he hopes to return in November and spend two months here to collect all possible information about our industry and business. We hope the result may be to convince Mr. Klingen that Ceylon can supply all the delicate fine teas required by Russia; and further that in the face of our *cheap labour*, favourable climate and great general facilities, it is hopeless for his countrymen in the Caucasus to compete profitably in the production of tea. We bespeak all attention for Mr. Klingen: he is attending the Colombo Tea Sales today and hopes to go to Nuwara Eliya tomorrow. So far from being jealous of the "Commission," there is nothing like letting Mr. Klingen see and learn everything he can in our Ceylon tea country to enable him rightly to estimate what our planters can do, and to stir up the interest of himself and his countrymen in our enterprise and tea. In December-January next, we hope Mr. Klingen will be able to visit the majority of our districts from the Western sea-borde to the *ultima thule* of Uva.

COMPANY REPORTS: THE MAZAWATTE TRADE MARK.

COMPANY REPORTS.

With this are forwarded to you two Companies' reports, being those of the Hunasgeriya Tea Company and the Mahaousa Tea Company. The first of these reports states a profit for the year dealt with of £1,407 12s 2d. Out of this a dividend of 4 per cent is proposed, £498 being carried to the Suspense Account. The average selling price of the Tea is stated to have been 7·36d per lb. The Company has 789 acres under tea and 30 acres under cocoa. The directors of the Mahaousa Company report a profit for the year (nett) of £1,642. A dividend at the rate of 10 per cent per annum has before been paid, and a similar one is now proposed. This report has the advantage of letting us know the *cost* of the tea produced. This is stated to have been 5·91d on the average, and it must be confessed that this is a much higher figure than we had been prepared for when compared with statements of cost we have heard made by other growers of tea. The price obtained averaged 8·59d per lb., and the profit therefore falls considerably short of the 100 per cent deduced from statements before commented upon. The area of the Company's properties is, however, small, only 496 acres being in bearing, and this doubtless accounts for the higher relative cost per pound of made tea when that of larger estates is taken into comparison.

In reply to my application for the reports of the Madulsima and Haputale coffee companies, Mr. Davidson, their Secretary, writes me from Edinburgh that they are delayed in issue owing to the sudden illness of two of the Directors and of himself, but he hopes to be able to send them to me shortly.

THE MAZAWATTE TRADE MARK.

You will see by the extract given below of a Law Report that the Mazawatte Tea Proprietors have again been successful in the hearing of the case against their trade mark in appeal. My own opinion is, as you know, that some of the judges who have tried this case have fully appreciated all the points involved. Probably no one who has not resided in Ceylon, or who has not watched the effects of estate names on prices in Mincing Lane, could fully do so. But Messrs. Densham have now got the use of their beloved "Mazawatte" name guaranteed to them, and respected as these gentlemen universally are, it would be hard to refuse them our congratulations on their reaching their haven of rest after all the disquietude the action against them must have occasioned.

IN RE DENSHAM AND SONS' TRADE MARK.

This was an appeal from a decision of Mr. Justice Romer (reported in our impression of January 23, and 11 *The Times* Law Reports, 184), refusing to remove the name of "Mazawatte" from the register of trade marks. The word had been registered by Messrs. Densham as a "fancy word" in connexion with tea under the Patent, Designs, and Trade Marks Act, 1883, and had also been registered for an extended use in connexion with tea and coffee. Since the amendment Act of 1888 was passed, an Act which, it may be remembered, substitutes, for permission to register a "fancy word," permission to register an "invented word," or a word having no reference to the description of the goods, and not being a geographical word. The case is of some interest, owing to the length to which decisions have gone in restricting the nature of the word allowed to be registered. The applicant was a Mr. Deakin, who did not deal in tea and coffee; but was prevented from registering a trade mark "Marza" in certain classes by reason of the registration of the respondents' mark. Suggestions were made that the word "Mazawatte" was a compound of Cinhalese and Hindustani, and was descriptive of the goods, or geographical, or both.

Mr. Moulton, Q.C., Mr. Hopkinson, Q.C., and Mr. John Cutler were consul for the applicant; Sir Richard Webster, Q.C., Mr. Cozens Hardy, Q.C., Mr. Neville, Q.C.. and Mr. Sebastian for the respondents were not called upon.

LORD JUSTICE LINDLEY said he confessed that at first he thought this appeal as hopeless as it possibly could be, and he thought so still. He entirely agreed with the decision of Mr. Justice Romer and the reasons given for the decision. The word "Mazawatte" was clearly, in his opinion, a fancy word in common use, and therefore within the description of a word allowed to be registered as a trade mark under the Act of 1883, the Act under which the respondents first registered. With respect to whether the word was a fancy word he asked the question whether anybody ever heard of it. The answer was that no one who knew Hindustani, Cinhalese, or English, and no one acquainted with the tea trade, ever heard of it. Then he got to the Act of 1888, under which the respondents had registered in another class. The question under that Act was whether the word was an invented word or a word having no reference to the character of the goods for which it was used, and not being a geographical name. He considered all these definitions as applicable. His Lordship characterized some of the suggestions as to the word being descriptive or geographical as absurd. He did not know, if this word was not capable of registration, how any word could be invented that was. It was not their Lordships' business, he said, to fritter away an Act of Parliament, and if they went the length of disallowing the registration of this word, he was unable to find how any word could be invented that could be used as a trade mark.

4

Lord Justice Lopes, after saying that the case had gone quite far enough in holding words to be incapable of registration, and that the effect of the decision, if this went any further, would be to evade the Act, gave judgment to the same effect.

Lord Justice Kay concurred, and the appeal was dismissed with costs.—London *Cor.*

COCONUT PLANTING IN CEYLON.

Coconut planting appears to be a thriving and promising investment in Ceylon just now. The price (in silver) has gone up, it is said, beyond the most sanguine expectation of those interested, and as a result the cultivation is extending rapidly. Capitalists invest their money in coconut plantations with the greatest confidence, and the acreage of new lands that will be opened during the next planting season will be much over what it was in previous years. The question that suggests itself is whether the present prices will keep up, or, if they should come down, how far should it be to appreciably affect the industry. No other planting product, whether native or English, rice or tea, could stand just at presen a fifty per cent reduction, but "it can be safely said that coconuts would survive even a much greater reduction." The price may come down through over-production, but such an eventuality as over-production is not likely to occur for, perhaps, ten years, or till all the young plantations which exist at present come into bearing; it may go down through a waning of the demand, but there is no immediate likelihood of another product replacing the coconut partially or wholly ; in fact, the field for coconut products is daily extending. It is admitted that the fall of exchange has not been without influence in promoting this industry.—*Irish News*, April 20.

PLANTING AND PRODUCE.

TEA IMPORTATION DIRECT TO MANCHESTER.—There is every prospect of the importation of tea to Manchester being continued. The trade has taken up the question in a very satisfactory manner, giving prompt attention to the samples, which have been and are being got ready as rapidly as possible. Up to the present the demand for the teas imported by the ss. "Linlithgow" has been greater than the Custom House authorities and bonding warehouse could at once cope with. The Customs authorities have been most courteous, and have done the utmost possible with the staff at their command, which will certainly require to be increased in order to deal successfully with the gross weighing and taring of tea in such large quantities as will be imported to Manchester before long. We understand, says the *Manchester Guardian*, that although some Indian tea is usually ready at the gard n by the beginning of May, this would not be suitable for the Manchester standard of taste, the first flushings being frequently poor in cup. The Manchester demand is for sound and good liquoring tea ; consequently it will not be possible to obtain a shipment of this character earlier than the end of June, to arrive early in August, and arrangements to this end are being completed.

THE BUDGET AND THE TEA DUTY. Discussing the Budget the *Daily Chronicle* says, referring to the Free Breakfast Table: "Every penny that Sir William Harcourt can spare ought unquestionably to be devoted to this object. The last Budget did something for the black-coated proletariat. It left the great mass of the people who live on small weekly wages exactly where they were, with their tea, their coffee, their cocoa, their currents, their liquor, their tobacco highly taxed. We say nothing for the moment about the liquor. Let us look at the other items in the list. Take tea. There is a tea duty of 4d in the pound, which brings in nearly three and a half millions a year. This tea duty has to be collected, and so the tea must be sampled, repacked, and handled many times before the Customs are satisfied, and by the time the pound of tea has had the Mincing Lane profit, and the middleman's profit, and the retailer's profit added on to its original cost, plus the increment of duty and Customs expenses, which is reckoned in each time, the consumer will be taxed not 4d, but 8d in the pound. The same process is true of all dutiable articles, and we believe that in the case of dried fruits, which bring in a revenue of about £1,000 a day, the ultimate cost of collection to the consumer is excessive. It is really monstrous that the poor consumer should be taxed to this tune for his everyday needs."

JAVA TEA.—Java planters have given their attention lately to improving their metho s of manufacture, and it is not without its effect. In its reference to last week's sales of Java tea the *Produce Market Review* says: "Owing to the great improvement which has been effected in the manufacture of these teas of late, chiefly through the use of Indian seed, many of the Java gardens are now producing tea of really excellent quality, the liquor being in many instances quite free from that disagreeable flavour which was formerly characteristic of these growths. At the present moment there can be no doubt that many of the Java teas now in the market are distinctly better value than any other descriptions at similar prices, and grocers have not been slow to appreciate this improvement, as they have lately been large buyers of these kinds."—*H. and C. Mail*, May 3.

TEA-GROWING IN BENGAL.

To the planter who has the "overproduction" fear already upon him, the history of the growth of the tea industry in Bengal alone during the past year cannot be pleasant reading, though it will undoubtedly bring joy to the hearts of all who are not pessimists. During last year there were 424 gardens under tea cultivation, an increase of only one on the previous year's figures ; but in the average under cultivation there was a considerable increase, the figures rising from 93,000 acres in the previous year to 110,000, and the outturn being increased by a million pounds. The average outturn per acre, however, has fallen from 400 lb. in 1892 to 330 in 1893. A curious feature of the returns is the great increase in the number of temporary labourers employed in gardens and the equal falling off of permanent labour.—*Madras Times.*

HUNASGERIA TEA COMPANY, LIMITED.

The following accounts are now presented to Shareholders viz :—

Balance Sheet shewing the financial position of the Company on 31st December, 1894.

Profit and Loss Account, for crop 1894.

It will be seen from the Profit and Loss Account that the weight of Tea sold in London during the year amounted to 273,621 lb.; this included about 9,000 lb. of tea made from bought leaf. The average selling price was 7.36d per lb., and the proceeds amounted to £8,443 1s 3d including that sold in Ceylon.

The crop of Cardamoms realized £65 0s 1d.

Cocoa weighing cwt 17·2·20 was sold for £42 18s 7d the average price being 48/6 per cwt.

The total receipts from sales of produce thus amounted to £8,550 19s 11d.

The total expenditure for the year in Ceylon and London was £7,143 7s 9d so that a profit is shewn on crop 1894 of £1,407 12s 2d.

It is proposed to appropriate the above profit as follows :—

To the payment of Dividend of 1 for the year	£909	2	5
To the reduction of Suspense Account	498	9	9
	£1,407	12	2

After crediting the above sum of £498 9s 9d the Suspense Account will stand at £650 18s 0d.

The crop of Tea estimated in the Directors' last Report was secured, and the profit deriveds shews a marked improvement on that of any former eason.

The selling price of the Company's tea was very slightly below that of the previous year, while Exchange ruled considerably in favour of the crop just closed.

The latest reports from the Property state that the Tea is in first rate condition and cropping well, and indications all point to a good yield being secured during 1895.

The cultivated area is as under :

Tea - - -	789 acres
Cocoa - - -	30 ,,
	819 ..

Mr. H H Potts, a member of the Board, retires from office on this occasion, and being eligible, offers himself for re-election.

Mr. JOHN SAWYER, the Company's Auditor, also offers himself for re-election.

EASTERN PRODUCE AND ESTATES COMPANY, LIMITED.

(From the *Money Market Review*, May 4.)

The eighth ordinary general meeting of the shareholders of this Company was held on Monday last at Winchester-house, Old Broad-street, Mr. C. J. Lindsay Nicholson (the Chairman) presiding

The SECRETARY (Mr. Douglas R. Smith) read the notice calling the meeting.

The CHAIRMAN: Gentlemen, I presume we may take the report as read, and I will now proceed to make a few remarks upon it. If I refer to the last meeting, and repeat what I then said, I could not do better, and that was the Company was never in a stronger and better or more favourable position; for, in spite of some little deficiency in the estimates consequent on bad weather, our nett profits have exceeded our last year's profit by about 30 per cent. The directors are very pleased to meet you, and to be able to speak so confidently of the concern. You will see by the report that we have made £26,486; that we propose to pay off the sum of £17,000 of debentures, and to pay a dividend, which will take £8,974, the highest dividend that we are able to pay under our existing circumstances. On the asset side you will notice that the outlay for buildings and machinery is now written off by an amount of £1,837, and it now stands at £9,281. Our machinery is all very good, but we put the knife in in the way of depreciation, thinking it best to be on the safe side. The produce on hand on the 31st of December amounted to £21,694—that has all been sold since, and sold well. Sundry debtors are £22,356—good liquid accounts—much about the same as last year. Our investments amount to £22,325, the bulk of which are in India Three per Cents. They are brought in at the value of 31st December, and I believe there is a considerable improvement in the value at the present moment. As to the course of tea, it is very difficult to forecast the future of tea prices. Competition now is very keen, production increases yearly, and there is a need of increasing consumption in markets abroad, such as Australia, America, and Canada, for it is in such that the nature of Ceylon tea is appreciated. I notice that eight years ago the consumption of Indian tea in the United Kingdom was 68,000,000 pounds, and of Ceylon tea 6,000,000 pounds. Last year the consumption of Indian tea in England was 116,000,000 lbs. and of Ceylon tea 71,000,000 lbs. (Applause.) So the Indian tea consumption may be said to have increased from 38 per cent to 55 per cent of the whole, while that of Ceylon tea in the same period has improved from 3 per cent to 33 per cent. (Applause.) There is one disadvantage that has been pointed out in connexion with Ceylon tea—it is so good, and goes so much further, that it benefits rather the consumer than the manufacturer, but that is a good fault, and we will endeavour to keep up the character of the tea. Australia, I notice, in 1894 took 7,000,000 lbs., or five times as much as in 1890, while Canada took 1,000,000 lbs., against 627,000 lbs. in 1892. I mention these interesting statistics to show how keen is the enterprise of both India and Ceylon, and to point out that we are very much indebted to the intelligent zeal of our staff in Ceylon and their earnest desire to make your estates a success. (Applause.) the excellent result shown in the report now before us is evidence of the care displayed by the staff. We select some of our assistants from our office here, and I think our thanks are due to our secretary, Mr. Douglas Smith, for the judgment he shows in the preparation of young men for their Eastern career. (Applause.) There is one matter—which I dare say will occur to some of you—as to our debenture debt. Your board will not be satisfied until something is done and some re-arrangement of the debt has been arrived at, which will enable the shareholders to receive a dividend more in proportion to the earnings of the company. (Applause.) A prudent clause in our articles precluded at first any but a small dividend being paid until the debentures are reduced to £50,000. The prosperity, the assured position of the company, and the quicker reduction of the debentures leads the board to hope that some arrangement may be arrived at which may be more beneficial to the present shareholders than our present articles allow. I will ask you, however, to leave the matter in the hands of the board, and not to judge of the prosperity of the company by the amount of the dividend which we are now receiving. I do not think that there is anything further to allude to, but I will ask Mr. Cameron to second the resolution which I shall formally move, namely :—"That the report of the directors, dated the 19th April, 1895, be received and adopted, and that a dividend at the rate of 5 per cent per annum on the capital paid up on the preferred shares, and at the rate of 3 per cent per annum on the ordinary shares for the year ending 31st December, 1894, be declared and made payable on the 4th May, 1895." Applause.

Mr. RALPH A. CAMERON (managing director) seconded the motion. The chairman, he said, had touched upon most matters of importance, but there were two points which were encouraging. One was that, taking last year, the increased consumption of Ceylon tea had absorbed more than the increased receipts, and another encouraging feature was that of the re-export of Ceylon tea. There was no doubt that it had obtained considerable favour on the continent, and the re-exports had increased from year to year. It was reasonable to believe that when it had once obtained a footing in those countries, it was not likely to stop where it was, but that there would be a further development. (Applause) Last year there was some slight falling-off from the estimate, but still they got over three hundred pounds an acre on the crop in bearing, and it netted 7¾d per pound, or slightly over what they had received in 1893. The increased profit was to some extent due to the lower rate of exchange, but there was an increased yield, an increased price, and a smaller amount written off under the head of buildings and machinery, which would become less each year. With regard to 1895, the estimates were in, and were very satisfactory. There had been a drought in Ceylon a month ago, but the latest accounts were to the effect that rains had fallen. This was a somewhat early stage at which to predict results, but he had no reason to suppose that anything would interfere with the fulfilment of the year's hopes. They were adding to their acreage every year, and there would be another addition this year. There was one item in the profits which they attached considerable importance to, viz., the agency business. Including their own crop they had shipped a total of 9¼ million pounds, or about one-eigth of the whole exports from the island. They had obtained the sole agency of a good many manufacturing firms, and enabled them to execute orders for machinery and requirements, and also to supply their own estates on advantageous terms. They were also now making arrangements to develop the engineering business at St. Sebastian mills, under their resident engineer, in the expectation of getting a considerable business in the island in the way of repairing machinery. Having the whole thing *in situ*, it only meant a development at no great cost, and he had no doubt they would find it a very satisfactory and profitable arrangement. Last year the profits from the agency business and some incidental sources had paid for the whole of the London and

Colombo office expenses and had left a considerable margin over, and he did not see why that profit should not increase. Looking at the whole position, it was a matter of extreme satisfaction to see that the success he had always looked forward to was within measurable distance, and they were justified in hoping for better things than they had even yet accomplished. (Applause.)

Mr. MERRICK asked if it was not possible to raise an amount at four per cent. to pay off the debentures. He would also like to know if the accounts could not be stated under separate heads, and why the meeting had not been held earlier.

Mr. T. A. WELTON said he had received the balance-sheet with the greatest possible pleasure. Having had something to do with the original formation of the company, he had never hoped, in the time which had elapsed, that so good a result would have been reached. The balance-sheet was particularly worthy of confidence, because, owing to the peculiar articles of the company, there was not the least inducement for the directors to spare in the matter of depreciation, to attempt to over-value stocks, or anything of the kind. The balance-sheet was a most severely true one, and the profits earned were excellent, considering the difficulties in the last few years in making headway in almost all departments of industry. (Applause.)

The CHAIRMAN said that the board would not lose any opportunity of getting money on the best terms, but it should be remembered that this company had no uncalled capital, and its property was not situated in England. As to putting the accounts under three heads, tea, coffee, and cocoa, there was only one article of any importance at present viz., tea. The meeting had been held as soon as possible after the auditing of the accounts, but Easter possibly had made it a little later this year.

The motion was then put and carried unanimously.

The CHAIRMAN proposed the re-election of the retiring directors, Mr. Norman, Mr. Grieve, and Mr. David Reid.

Mr. CAMERON seconded the resolution, which was also agreed to.

Mr. REID returned thanks, and said that it was a matter of satisfaction to have been connected with this company, which had from its inception made such steady progress. The first balance sheet showed a balance of profit amounting to £435, while this year, after paying the full amount of debenture interest, they were able to show a balance of £26,600, although the average price of the tea, which was 1s per pound in 1888, was now only 8½d. In 1889 the company had no reserve fund, while they now possessed one of £10,000. Much was due to the ability of their able managing director, Mr. Cameron, who had watched most diligently over the business from the commencement. (Applause.)

The auditors, Messrs. Welton, Jones and Co., were next reappointed.

On the motion of Mr. MERRICK, a cordial vote of thanks was passed to the chairman and directors, and the meeting separated.

TEA PATENTS.

20,607. October 31, 1893. Tea rolling. Sutton, L. H., Brant Broughton, near Newark, Lincolnshire.

The hopper as well as the table has a rotary motion imparted to it by spur gearing on the shaft in order to impart a closer twist to the leaf. The hopper and table are mounted eccentrically, and they may be rotated in the same or in opposite directions by the bevel gearing shown. The interior of the hopper is ribbed for the purpose of checking the leaves, and producing a more uniform action upon them. The ribs serve also as guides for the weighted head-piece which is lowered upon the tea by a hand-wheel and is rotated with the hopper through the ribs. The saddle is pivoted at one side, and is swung aside when the head-piece is in position. The ribs may be dispensed with when it is desired that the head-piece should not rotate with the hopper, and arms which come in contact with the saddle are provided to prevent rotation.—*Patent Journal.*

BOOMING COFFEE.

"To all who are seeking health or wealth, pleasure or profit, to the artist, tourist, investor, botanist, agriculturist, mineralogist, and archaeologist, Mexico offers the finest fruit districts, the most fertile agricultural districts, the richest mineral districts and the most nutritious grazing districts, in addition to being an ideal summer resort, as well as being an unexcelled winter resort, with homes for thrifty settlers and fortunes for investors." This is pleasant reading if you happen to be a landed proprietor in Mexico; but if you are not, you may be a little sceptical, may reach for the salt-cellar or think about general Scadder and General Choke. For the foregoing is an extract from a Philadelphian pamphlet entitled "Important facts about coffee: Its planting and profit in the republic of Mexico." Throughout the civilised world, we are told, there is at the present time a rapid and constant increase in the consumption of coffee, and, although there has been a very marked increase in the production of this new necessary article of diet in Central and South America, the still rising prices for the commodity indicate that the supply does not begin to keep pace with the constantly increasing demand. These, it is said, are now well-established facts. Are they indeed? We venture to doubt their accuracy nevertheless. But let us see how they cultivate coffee in Mexico. The altitude best adapted to coffee culture in that country ranges from 1,000 to 3,000 feet above sea-level, which, we are assured, insures freedom from malaria and all diseases that visit the coast sections, and is well suited to persons accustomed to living in temperate climates. "The preparation of the land for a coffee plantation is *quite simple*, consisting merely of a partial clearing of the virgin forest that covers the ground and the digging of holes one foot square and six feet apart and one foot deep into which the young plants are placed as they are brought from the nurseries. If the soil be rich and deep, 800 trees to the acre is a sufficient number, as results with this number have been found more satisfactory than with a greater or less number per acre." The italics are ours. Quite simple as the preparation of the land is, the method of cultivation, we gather, is even simpler. The work is all done by women and children, so it is very cheap, and it consists entirely of weeding. The planter in Mexico apparently occupies his times sitting on a fence, whittling sticks, picking his teeth and waiting for the third year. "During the third year the plantations yield sufficient coffee to cover all expenses, the cost of producing every 100 pounds of coffee prepared ready for market not exceeding $8 per 100 pounds as a maximum, the market price of which at the present prices for coffee averages $20 per 100 pounds." Appended to the pamphlet is "a careful and conservative estimate, showing the cost and profit of a 100 acre coffee plantation." Where is the planter who is not only too familiar with these "careful and conservative estimates?" It works out so beautifully:—"Thus the investor receives back by the end of the fifth year nearly five times the amount of his original investment and is the owner of a property valued at $20,000." What a glorious prospect! Only five years planting, and then breaks a golden dawn and a perennial stream of silver dollars rolls rippling in. Will any bird be caught with such chaff? Working on just the same lines we are prepared to prove quite as convincingly that there is no more profitable investment or healthier life for persons with weak lungs than the cultivation of Dead Sea apples in the desert of Sahara.

In this pamphlet, which by the way is being scattered broadcast throughout the world, there is just one point which calls for serious consideration. Among the causes enumerated why the small capitalist should invest his money in a Mexican coffee plantation is the following:—"The decreased and constantly decreasing supplies received from Java.

Sumatra, Ceylon and other East Indian countries, which at one time furnished the world's supply. The decline in these countries being attributed to the leaf and bug disease and other causes, but which is *in reality due to overworked and worn-out soil.*" Again are the italics ours. A statement like this, containing just sufficient truth to give colour to it, is calculated to do harm. And the worst of it is, there is in publication no hand-book, so far as we are aware, of the coffee districts of the East-Indies which contains the true version. We have before now urged on planters the advisability of advertising their districts in other countries. At present they are hardly known outside a very small circle in Mincing Lane. We do not recommend putting forth flaming pamphlets full of flimflams about the wonderful attractions of coffee cultivation in Indian jungles; but the product is still a fair investment, and, keeping well within the borders of truth the planter's life in Southern India has many attractions to offer. We should heartily welcome the appearance of a carefully compiled "Hand-book of Coffee Planting in Southern India" which would convey to English readers a true account of the districts, the life and the prospects.—*M. Mail.*

TEA PROSPECTS.

When one considers the very large extensions that are being opened out in the tea districts, the question of future markets is one that must force itself on our immediate attention. That the yearly outturn will steadily increase there can be little doubt, the problem is where to place it. A proprietor who has been recently through the districts has written a few notes on this subject to a local daily contemporary and has made one or two suggestions with which we entirely agree. He writes:—"With the enormous extensions being proceeded with in the Dooars and Sylhet in the shape of new gardens, and the large additions that are being made to old and new estates in Assam, it is difficult to grasp what our output will be in the year 1901, but I predict that it will not fall much under 180,000,000 lb. that almost all the well-known seed gardens have sold their full crop for 1895-1896 and some for 1897 goes to prove the large forward policy in extensions. From now our annual output will advance by leaps and bounds and the crucial test will soon be apparent. Can we place it and at the same time maintain remunerative prices? I am writing this in no pessimistic spirit as I am a staunch believer in tea, but unless we, as a body, bestir ourselves and give stronger financial aid to the Association to enable it to extend its wings and that as rapidly as possible, we shall assuredly live to regret our inaction and indifference in this important matter. In fact we are at present *riding for a fall* and will come the inevitable cropper sooner or later unless we can manage that our coming large increase in outturn be diverted into fresh channels for consumption."

This states the present position in a nut-shell. India *must* find new markets and that speedily. We are doing well in America and the success of our experiment in that direction should encourage us to turn to Russia with a practical scheme for introducing and pushing Indian tea in that country. Russia's demand is enormous and with all the favourable conditions now existing the present, as our contemporary's correspondent justly remarks is the most opportune time for beginning operations. The writer continues:—"I do not think there is much or anything to be gained by sending home fancy samples of teas to be bottled and looked upon by visitors as curious compounds, utterly unlike the leaf as sold for drinking purposes. Liberal contributions in money or good drinking tea would be much more to the point. I may be pardoned for saying so, but I consider the present contribution of gardens towards the funds of the Indian Tea Association are totally inadequate for the purpose of pushing the sale of Indian tea in other countries. The present subscription to the Tea Association is 1 anna per acre, which I would suggest being raised to 4 annas and retained in force as long as deemed needful. This would give about one lakh of rupees per annum, which amount judiciously spent would do much to gain the desired object.

"Ceylon, in conjunction with that coming country, Travancore, will easily manage to fill the gap caused by decreasing imports from China, which leaves us no safety valve in that direction. So let us bestir ourselves and not be caught napping when the pinch comes. The charge I have suggested would be but a small item in the annual expenditure, and in my humble opinion no sounder, more necessary, or legitimate one could be levied."

This suggestion of the enhanced subscription and the despatch of a Commissioner to Russia are worthy of careful consideration and we earnestly hoped they will commend themselves to those in whose interests they are made.—*Indian Planters' Gazette*, May 11.

PLANTERS AND LABOUR SUPPLY IN CEYLON.

A very trenchant, practical and altogether important deliverance from an impartial, and yet experienced point of view, will be found on page 41, by an esteemed correspondent. It is almost as good as a summing-up of a great deal of the discussion that has taken place, and we commend its several statements, criticisms and proposals to the careful consideration of the community concerned. Is there any denial of the fact that the cry of "shortness of coolies" between March and June, is succeeded by a surplus of labour and short time work from July onwards? If not, it is not right to say that the supply of coolies is permanently deficient, and one question to be asked is, could the time for visiting the Coast not be altered from the busy, to the slack, months? This may be impossible at present, seeing the wet weather for travelling before the coolies in July-August; but if there were *through railway communication*, would the weather make so much difference?

In any case, we think the time has come to call on the Planters' Association to appoint a small, but efficient, Sub-Committee, to take into consideration all that has appeared in the local Press since 1st January last in connection with the subject as well as the Reports and information already in the Association's archives, and to analyse and report on the same with reference (1) to the actual planting requirements for coolies now and in the next five years, in the busy and slack periods of the year; (2) how best to reinforce the supply in the former, taking Mr. Young's suggestion for a through Railway as saving time and bringing more coolies, specially into consideration; (3) how better to distribute the supply as well as re-arrange the work required; and (4) to draw up regulations for general guidance as to the local engagement and discharge of coolies by all planting employers.—What transpired at the Dimbula and Maskeliya Associations will all be useful to the Sub-Committee if duly nominated.

COFFEE IN HAPUTALE.—We learn that the prospects of good Autumn and Spring coffee crops in this favoured district are exceedingly good. Two of the estates specially noted for their coffee are Gonamotava and Roehampton, and in connection with the latter it may be remarked that a contemporary was quite wrong the other day, in mixing up the proprietor (Mr. George Somes) with the recent London failure. This gentleman has no responsibility whatever for the mercantile house which bore his name.

CHEAP TRANSPORT AND HOW TO GET IT:—No. III.

BY J. DAVIS-ALLEN.

WORKING EXPENSES.

(Continued.)

Continuing our remarks on the subject of Working Expenses we have now to glance at some of the circumstances by which the standard of cost per train-mile is liable to be affected, taking first the

LENGTH OF THE RAILWAY.

A locomotive can run week in week out a distance of 100 to 120 miles a day, according to speed and gradients. Lines, therefore, of a length —50 to 60 miles—which admit of a locomotive doing the double journey in the day are specially adapted for economical working in the item of train expenses, inasmuch as both machinery and men are kept fully employed. On the other hand fixed charges, as for management and terminals, tend to show less the longer the line, for the simple reason that there are more miles to distribute them over. We use the word "tend" to indicate the absence of any invariable relation between length and fixed charges such as subsists between length and train charges.

QUALITY AND TYPE OF LINE.

It is with railways as with boots, the inferior article wears badly and is costly in repairs and renewals. From which it follows that the wiser outlay of a restricted capital is on a first quality "little" railway (always supposing it will fit the traffic), with a solidly built, well-ballasted road, capacious waterways, and rolling stock of the best, rather than on a second quality "big" railway like—shall we say?—that which Mr. Waring proposes to build to Jaffna. It sometimes happens that the initial capital is so scanty as to compel the use of second-hand light iron rails, worn rolling stock, patched-up locomotives of obsolete pattern, and other economies justifiable only as being the sole alternative to no line at all. In these cases, and in all cases of inferior type or quality, Working Expenses will be increased in the items of maintenance and repairs, and the percentages in the table of costs which we gave in our last article will be correspondingly disturbed.

The question of gauge will come up for fuller discussion in connection with Capital Expenditure, but having a bearing on Working Expenditure also, some remark is called for here. Advocates of the broad gauge type of railway have done their utmost to prove that at all times, in all places, under all circumstances, the wider the gauge the cheaper to work; and amongst the apostles of this gospel none stands higher than Mr. F. J. Waring, C.M.G. witness the painstaking and accomplished paper he read on "Indian Railways" at the Institution of Civil Engineers in March 1889. With this paper, and the similar and more recently published utterances of Mr. Eddy, before us, we yet venture to hold that the relation between gauge and Working Expenses is an eminently contingent one, depending wholly on place and circumstances, and therefore that any conclusions must be doubtful which, like those set out in the paper aforesaid, are arrived at by a statistical method whose essence it is to mask peculiarities in averages. Mr. Waring's argument in favour of broad gauges is based on a table of 65 "Means" as they are called, calculated from the statistics of 12 Indian metre gauge lines and 8 Indian lines of the 5 ft. 6 in. One of the speakers in the discussion which followed the reading of the paper challenged the way in which the "Means" had been taken out; he would have done better had he gone a step farther and asserted that the *doctrine of means* was altogether inapplicable. The very use of the word in such a connection ignores the radical difference between a *mean* and an *average*, a difference fundamental to the Science of Statistics. Following Herschel and Quetelet, we may put it thus: an *average* may exist for the most different and dissociated objects such as the height of the houses in Colombo, or the number of passengers landing daily, or the amount of money spent per passenger at the hotels. It may be convenient to convey a general notion of the things averaged, but it involves no conception of a natural and assignable central magnitude or norm, all differences from which ought to be regarded as irregular and anomalous. A *mean*, on the contrary, does involve such a conception. It implies a regularity in the fluctuations within the group of which it is the norm and facies, and an assignable maximum and minimum of variation. Again an *average* affords no assurance that what is to be, either will be, or should be, conformable to it; but a *mean* does. Mr. Waring's "means" are most of them merely averages, and will not bear the argument he bases on them. In other words, granting that the 12 narrow gauges average out badly against the 8 broad gauges, it does not in the least follow that the 13th narrow gauge will follow suit; if, however, his "means" were true means, it would follow.

Mr. Waring, then, has yet to prove us in error when, with a rapidly increasing concensus of authority behind us, we aver that broad gauge railways can economically meet the legitimate demands of the public in the matter of frequency of trains only when the volume of traffic is sufficiently large to load them to their full capacity; a state of things which nowhere obtains outside the densely populated manufacturing districts of the old world. In most of the districts now calling for railways the traffic, both passenger and goods, is, and must long remain, small out of all proportion to the carrying capacity and capital cost of such powerful machines as the 4′ 8½″ and 5′ 6″ gauges. The insistance on them under such circumstances has two inevitable and disastrous issues: (1) that to keep the capital outlay to the amount the traffic will bear, an inferior type of construction and equipment must be adopted; and (2) that to keep the cost per ton-mile (the favourite unit of the broad-gangers) to a presentable figure, the work must needs be done with as few trains as possible, to the serious inconvenience of the public which is entitled to a certain frequency of service. And here we come upon a point of difference between broad and narrow gauges, and in favour of the latter, to which sufficient attention has not been given, namely that in virtue of the lower cost of their rolling-stock, the closer approximation of dead to paying load, with sundry other advantages, they are able to supply more economically the train-mileage in excess of pressing and present demand which is necessary if the latent traffic of a district is to be stimulated.

The returns of broad gauge lines look best when figured out per 1,000 gross ton-miles, and it is for this unit Mr. Waring pleads in his comparison of the Indian broad and narrow gauges. But a fitter measure of the *serviceableness* of a railway is train-mileage, and the check on extravagance is the ratio between expenses and earnings per train-mile; which figure also measures the effectiveness of the supply in stimulating demand.

Broad gauges seldom come out well under this test. Their working expenses in the items of maintenance and repairs wear a sinister look unless figured out on a unit which gives credit for gross load; but we question whether credit should be allowed for wear and tear due to the unnecessary dead-weight of quarter filled 5' 6" rolling stock—the average load on the C. G. R. according to the 1893 Report.

THE NATURE OF THE TRAFFIC

is commonly accounted a determinant of Working Expenses, and it is so in cases where (1) either goods or passengers are greatly in excess, or (2) the bulk of the goods traffic is mineral, or (3) the traffic is mainly end-to-end, or (4) is seasonal or intermittent. The effect of a predominance of either goods or passengers on cost per train-mile came up for remark in our last article in connection with the Cape Government Railways. The difference is seen mainly in the item of Station Charges, but to be material the line must be almost exclusively either for passengers, like the "Metropolitan" of London, or for goods, like the "Hull and Barnsley." Obviously these cases rarely occur in new countries, where, indeed, the bulk of the traffic is of a nature which admits of being dealt with by "mixed trains." The second and third conditions above-mentioned make for cheap working; the fourth tends on the whole to increase expenditure. But while undoubtedly the nature of the prospective traffic is a consideration to be kept prominently in mind by the promoters of new railways, in nine cases out of ten it is the specifications for plant and rolling stock, not the estimates of Working Expenses which will be modified thereby.

There are other factors, some technical, some economic, which share in the determination of Working Expenses, and which must therefore be taken into account before the standard of cost—2s 6d per train mile, can be safely used unchanged as a basis for estimates: wages, fuel, water, rates and taxes, climatic oddities. Our purpose however is, not to exhaust the subject, but to say so much thereupon as will serve to enforce the axioms that there are no fixed rules for railway enterprise: that precedents have no value except as hints and warnings; that if a railway is built of a certain pattern because other railways have been so built it is pretty certain to turn out unsatisfactorily: and lastly that in the problems which have to be solved before the first sod of any new railway can safely be turned the plain man has a share and a voice which he cannot judiciously delegate to the Engineer.

In our next article we shall deal briefly with the relation between Management—State and Company—and Working Expenses; and shall then take up some of the questions which arise in connection with TARIFFS.

PLANTERS AND LABOURERS: THE CINNAMON INDUSTRY AND THE DESERTION OF "PEELERS" WORKING UNDER A CONTRACT SYSTEM.

Tea planters in Ceylon are not alone in their experience of disturbing, if not contradictory, judicial deliverances in reference to the relations existing between employers and labourers on plantations. The oldest, and at one time the most important Planting industry in Ceylon—that of cinnamon (the spice which, sent from our shores to Rome in the time of the Emperor Augustus, sold for the equivalent of £3 per lb)—is much disturbed at present in its headquarters in the Negombo district by the difficulty of securing punishment for labourers who break their contract and desert their employers, perhaps at the most critical time of the whole year when the Cinnamon bark is ready to peel and when a few days and a change of weather may make a vast difference in the value of the crop. If ever there was a case where prompt punishment is needed, one would say it was in the case of deserters under such circumstances—labourers taking advantage of the absolute and urgent necessity of their employers to show their importance if not to vent their malice by running away from their contracts, knowing how extremely difficult it will be to fill their places. For, unlike ordinary estate coolies, cinnamon peelers are a class by themselves and may in fact be considered to be "skilled labourers." The only parallel we can give is that of the trained hands of a tea factory at the very busiest time of the year, without cause deserting their posts. How should the Law and the Courts treat such a case?

In the case of the spice industry, it is not, apparently, that in the present year there has been any special increase of "desertion" from cinnamon estates; but that the present Magistrate of Negombo—unlike any of his predecessors—has decided that cases of desertion and breach of contract such as we have described, should be proceeded against, not criminally—by issuing warrants for the apprehension of the deserters—but through civil actions. A "civil action" against a bolting cinnamon peeler!

Let us now proceed to deal more in detail with the state of affairs revealed by the proceedings in our *Supplement*, and in doing so, it will be observed how applicable is much of what we write to the case of tea planters and their labourers. First, to quote from the Introduction to Messrs. Lewis and Crawford's admirable compilation:—"Plaints under the Master and Servants Ordinance":—

"In any country, in which slavery is illegal, the relations between master and servant must necessarily exist by virtue of some agreement, either express or implied between the parties—in other words they are created by contract. The remedy for breach of contract is ordinarily by civil action. The experience however of different countries has shown that, so far as regards this class of contracts, the remedies afforded by the Civil Courts are inadequate for the due protection of either master or servant." "Whereas much loss and inconvenience are sustained by manufacturers * * * from fraudulent breach of contract on the part of artificers, workmen and labourers, who have received money in advance on account of work which they have contracted to perform; and whereas the remedy afforded by suit in the Civil Courts for the recovery of damages is wholly insufficient and it is just and proper that persons guilty of such fraudulent breach of contract should be subject to punishment" &c. (Preamble to the Indian Act No. 13 of 1859). In the words of Sir C. Marshall "a criminal prosecution is the only remedy in very many cases, which from the relative situation of the parties, and from the circumstances of most servants, can be made available to their employer." * * *

"It is because the circumstances of most servants would incapacitate them from paying damages that the breach of their civil contracts of service are thus punishable criminally. In other words, the fear of punishment, operating on the mind of the servant, is given to the master as a protection against misconduct in the room of a pecuniary indemnity, which, if awarded by a decree, could seldom be actually recovered (910 D. C. Coll, 1835, Judgments p.p. 490, 500).

Now let us see how the Cinnamon Planting Industry has been hitherto worked, and the fol-

lowing information on this subject is from an undeniable authority with long experience of the working of plantations :—

PEELER-CONTRACTS AND THE ADVANCE SYSTEM.—The maintenance of the cinnamon industry depends upon, among other things, penally enforced contracts extending over a term of years. Advances ranging from R10 to R30 each are made to the peelers on written contracts, executed in the manner prescribed by clause 7 of the Ordinance No. 11 of 1865, whereby they agree to peel and prepare cinnamon "on all the days, except Sundays," during a term of three years, it being important to secure an adequate force so as to take in the available crop when the conditions for peeling are favourable; otherwise the crop depreciates if it is not harvested at the proper time from the spice becoming coarse in quality, or, if it has become too coarse to peel, the out-turn of quill bark is diminished. There are two distinct peeling seasons in the year, the *maha mosuma* or big crop, which usually begins some time in May and the *punchie mosuma*, or small crop, which commences on some date in November. The peeling is adversely affected by drought and the flushing of the bushes and whenever this happens harvesting operations cease till such time as the condition for peeling are again favourable. Although, when a break of this kind occurs, the peeler is offered other work on the estate, at a rate of wages which the ordinary Sinhalese labourer is satisfied with, he seldom avails himself of the offer and leaves the village in search of more congenial occupation. If he succeed in the object of his search he is often tempted to stay away altogether taking care to conceal his whereabouts from the two individuals most concerned in his welfare, namely; the Cangany and Superintendent, thus defrauding the estate of his services and the money advanced. Others again take advances from estate after estate with no intention whatever of performing their share of the contract and with the money thus obtained by fraud hold high carnival during the Sinhalese *Avurudu Mangalya* and having "rubbed themselves with oil" elude the clutches of the several dupes by mysteriously disappearing just about the time work begins on the estates.

The peeler being a skilled workman, his place cannot be filled by an ordinary labourer, with the result that serious loss is caused to the estate as previously stated. It seems to be unfair to the employer that a labourer absenting himself without leave during the period of his contract can practically deduct the time of his absence from the term he has to serve and it also seems unfair to both that if, on arrest after the expiry of the term of his contract, the labourer is willing to work and the employer to accept his services the Court cannot pass an order to that effect.

The intention of the existing Ordinance which governs the relation between master and servant is that breaches of contract should be treated criminally; but the law seems defective or capable of being so interpreted as to afford several loop-holes of escape to defaulters as the case under notice illustrates. The contract does not stipulate that notice of the date of commencement or resumption of work shall be given to the peelers, for the peeling season is a period well ascertained and understood in the business and, as skilled labourers, (peelers from their childhood up and descendants of peelers) they ought to know, and do know very well, when the cinnamon is peelable. It is absurd, therefore, to suppose that a peeler who keeps away for not one season only, but for several successive seasons and in some cases for the whole term of his contract is not aware that during his absence harvesting has been going on on the estate where he has contracted to work. To hold, as the Magistrate has held in case No. 19211, that a defaulter, who for a period of more than 11 consecutive months failed to attend and carry on the work he had contracted to perform, is not guilty because notice of the resumption of work could not be served on him in a *terra incognita* must work much mischief with a class of people who are so ready to take undue advantage of an opportunity for neglecting to perform their obligations. To illustrate:—It is a fact, well-known in the Negombo District, that about 9 years ago, owing to neglect on the part of a Superintendent to prosecute deserting peelers, his successor in office, who was most alive to the interests of his employer, had to institute nearly 200 cases shortly after he assumed the management of the estate. This, it is said, led to the Government inquiring how it was that there was such a sudden and appalling increase of crime in the district!

Desertion, on the estate referred to, was soon checked by the prompt prosecution and punishment of offenders, but it is likely to break out again in an epidemic form on all estates generally when the news spreads out among the peelers that the evasion of notice in all that is required to justify the offence.

In case No. 19,217, the judgment, so far as it holds that the previous conviction of the defendant determined the contract of service and bars any prosecution for failing to return to work after the expiration of the term of imprisonment, is erroneous and against authority. The case reported in 4 S.C.C. 8, referred to by the Magistrate, is the leading case in point. The unqualified statement of the Superintendent in the previous case against the same accused that he was "not willing to receive him back" is taken by the Magistrate to imply a rescission of the contract, but it may also mean—and it is to be inferred from the statement having been made *before the conviction* that it was so meant—that the defendant should not go unpunished and that if the complainant's taking the man back was to end in the man being discharged from the prosecution he would rather not take him back.

If "the conviction and imprisonment of a servant for breach of contract operates as a rescission of the contract of service and the servant is not liable to be again convicted" then the servant might, if he is so disposed, "put an end to his contract, by a wrongful act, *against the wish of his employers*."

We think it can be seen from the above how the obstacles now thrown in the way of the planters in trying to recover and punish deserters, threaten to undermine the very foundations of the Cinnamon Industry—an industry already none too prosperous and which has to be worked with the closest regard to economy in every department. We think, therefore, that the Attorney-General should give every facility to have an appeal taken to the Supreme Court from the Negombo decisions, and then, if these are upheld, there should be a clear case for going to the Government and Legislative Council—as otherwise we may certainly expect a withdrawal of capital from the already far from popular, but on many grounds, important Cinnamon Industry.

ESSENTIAL OILS.

CINNAMON OIL, CEYLON.—A lively movement has taken place in the prices of fine qualities of cinnamon-chips, which ranged in the course of the last half-year from 1½d to 2½d per lb, the last quotations from Colombo being 2d to 2¼d per lb for April-shipment. The total exports of chips average about one-third by weight of the total exports of Ceylon-cinnamon bark. The world's consumption of barks and chips together during the last few years has been, in round figures 2,500,000 lb a year. From our means of judging the position we are rather inclined to predict an advance in the price of cinnamon-bark oil.

CITRONELLA OIL.—Since our last Report the prices of this important article of perfumery have gradually advanced to the extent of about 10 per cent. The consumers however have not taken any notice whatever of this occurrence, which in all probability is connected with the large exportation of the oil. For the past year the statistics show a quite unusually high figure.

With regard to the export of citronella oil to Germany it may be pointed out that the figure of 808,914 ounces does not represent the whole of the actual consumption, inasmuch as a large portion of our imports is shipped by way of England; the imports of our Leipzig house alone in the course of 1894 amounted to over one million ounces, while our New York firm alone takes more than one-third of the entire exportation of citronella oil to the United States.—*Schimmel & Co.*, Leipzig, April, 1895.

NEW ERA IN TEA CULTIVATION: THE MANURING OF TEA.

There can be no doubt that we are entering on a new era of cultivation in respect of our great Tea Industry. For some years, our planters as a whole, treated with absolute indifference—if not scorn—the several warnings advanced to them in these columns by their good friend and prescient counsellor, Mr. John Hughes, the London Consulting Analytical Chemist to the Planters' Association. Mr. Hughes pointed out that it was impossible to go on taking from ½ to 2 tons of leaf per acre from their tea plantations without making any special return save in prunings and such cursory "tilth," or turning of the soil, as might be possible. In reply, many of the planters indicated their dread of manure—artificial preparations especially—as being associated in their minds with the declension and ruin of their coffee (although any connection between the outburst of *hemileia vastatrix* or "green bug" and the application of manure has never been demonstrated); and they further hinted the proverb "Sufficient for the day is the evil thereof"—meaning that they meant to go on so long as their trees responded. But this was a short-sighted decision and its folly is now very generally acknowledged after the most practical fashion, namely, by the activity which is visible in reference to Manuring. A very short period has brought Mr. Hughes his revenge. Of course there were certain long-headed men amongst us who have all along, more especially when dealing with old coffee land, systematically applied manure, and these have not only been rewarded with better returns, but find their trees kept up in heart and vigour; while in some cases at least, their neighbours have had to complain of signs of weakness and a falling-off in crop. However, it is no use "crying over spilt milk," and our purpose in referring to the subject today is to introduce a further valuable paper sent to us by Mr. Hughes, full of most useful and practical suggestions which, we trust, will be taken into careful consideration and, as far as possible, acted on by the planters. If the several District Associations took up the experiment indicated by Mr. Hughes and endeavoured to formulate information from representative estates within their bounds, we feel sure that the value of their work would be generally appreciated. As regards the handling or moving of the soil—the "tilth" which Dimbula veterans so well recognise—we have more than once referred to our experience of Horagalla-Ingrugalla coffee estates, Hantane, well-nigh thirty years ago. How Mr. George Mackenzie (of Messrs. George Steuart &Co.) had advised the Superintendent to get ready a field for the application of 20 or 30 tons of manure to be sent up; how the latter set to work and had a big section on the hillside duly holed; but the manure never came and after some time the holes were filled in again—but what was the result a few months afterwards? An immense improvement in the coffee which so arrested our attention that we could not believe Mr. Arnott that no manure had been applied, so great was the contrast between two fields of the same age.

Mr. Hughes asks us to give the Railway returns for manure carried upcountry, as some index of the advance in cultivation. This we are enabled to do through the courtesy of the Railway authorities and it will be observed that the figures for the past six years indicate very

striking progress—an increase indeed of considerably over 100 per cent :—

	1889.	1890.	1891.	1892.	1893.	1894.
	tons.	tons.	tons.	tons.	tons.	tons.
Manure	2,572	3,576	3,355	3,141	4,154	5,818

But the progress made in the current year indicates a still greater advance. From the weekly tables we learn that in the past four months an unusually large quantity of manure has been transported :—

		Tons of Manure
January-April 1895	.. ..	2,381
Do 1894	.. ..	1,468
Increase	.. ..	913

Here, now, is Mr. Hughes' latest paper :—

THE MANURING OF TEA.

(*Extract from Sir Wm. Harcourt's Budget.*)

I will now turn to coffee. The consumption of this article has been steadily decreasing. In 1885-6 the revenue from it was £203,000. Last year it was only £170,000 compared with £3,500,000 derived from tea. While the population has increased 2,500,000, or 7·8 per cent the coffee revenue has diminished 16 per cent. Cocoa on the other hand is steadily growing in consumption. There has been an increase in the last year of 3,383,000 lb. as compared with 1893-4, giving an improvement of £14,000 in the revenue. Ripe fruit shows an increase of £30,000 over the previous year. These are articles representing three-fourths of the Customs revenue, which may be fairly taken as indicating the unbroken resources of the large mass of the nation.

The last number of the *Overland Observer* dated April 9th, contained an article on the above important subject.

The statement of a planter who informed the Editor that he had given up manuring owing to the depth to which the tap roots of his tea plants penetrated, was very properly severely criticised.

If the tap roots were found to have penetrated the soil to any unusual depth, it would indicate unusual vigour on the part of the plant, and a greater depth and porosity of soil than usually occurs on Ceylon tea estates.

Indeed the planter himself regarded the case he mentioned as quite exceptional, and in his opinion it should not operate towards dissuading tea planters from the practice of manuring. That being so, it seems scarcely necessary to have brought the subject forward.

The Manuring of Tea is, or should be, a matter of practical experience.

If good crops can be obtained without the application of fertilizers, planters would be very foolish to incur the additional expense caused by manuring.

If however, there is a marked falling-off in the *quantity* or the *quality* of the leaf, the experienced planter will very soon understand the necessity of instituting a careful enquiry into the process of manufacture, the mode of cultivation and the composition of the soil.

That tea is in itself an exhausting crop, and that the repeated and often severe pruning to which the trees, are from time to time, subjected, is also of an exhausting nature, cannot be denied.

How long the soil is capable of withstanding this exhaustion depends upon its chemical composition, its physical character, the particular situation of the estate as to exposure to wind and wash, and the general climatic conditions of the locality.

On really good deep soil protected from wind, under good management and in a favourable climate, tea may, and no doubt will be, produced for many years with satisfactory results without

any special manuring, beyond the careful return to the soil of all vegetable residue derived from an occasional pruning.

On the great majority of estates, however, a judicious and moderate application of manure, varied according to the nature of the soil, the altitude and the rainfall, seems to be the rational future treatment best adapted to the production of leaf of good quality.

That the altitude and rainfall should have an important influence upon the kind of manure to be selected has no doubt been already fully recognised by planters who have had any experience in manuring on estates having a considerable difference in elevation.

Thus for lowcountry estates a more mineral and less stimulating fertilizer will probably be desirable, while at an elevation of from 2,000 to 4,000 feet, a more nitrogenous manure will be found suitable.

These are points which, together with the analysis of the soil as to its richness in Potash (the dominant constituent of the soluble ash of tea) and in Nitrogen, which forms so important an element in the composition of the organic portion of the leaf, should engage the attention of the Analyst when recommending the most economical as well as the most suitable manure.

According to the experience of the writer, this practice of enquiring into the composition of the soil and the requirements of the crop is now resorted to much more frequently. During the last year more tea soils have been submitted for analysis than during any previous year since the writer's first official visit to Ceylon in 1877.

As recently as February last, ten tons of a special manure was prepared by a London firm according to the writer's suggestion, and after careful analysis shipped for a planter in Dikoya.

The local Railway returns should indicate whether manuring is being given up or not.

While recommending the judicious application of fertilizers according to the requirements of the soil and situation, it should be always remembered that manuring (from manus = a hand) originally meant the handling or moving of the soil; hence the origin of the bare fallow during the summer months which enabled the farmer to thoroughly turn and clean his land in preparation for wheat.

This turning of the soil and exposing it to the action of the air is of the greatest importance as an agricultural operation. During a professional visit to the Vine districts of Spain in 1879 the writer was much interested in observing the local custom of treating an old or partially exhausted Vineyard, namely by digging it over to the depth of three feet and so loosening the soil and exposing it to the atmosphere as to improve the mechanical condition, while also rendering the mineral constituents available as plant food.

These remarks may be concluded by suggesting that it would be a useful thing to ascertain how far the regular prunings of the tea plant constitute an exhaustion.

Let the prunings from ten trees be carefully collected and the leaves and twigs separated and weighed in their fresh green state.

Let these be carefully sun dried, again weighed, and about 1 lb. of the dried leaves, and 10 lb. of the dried twigs should be packed in sealed bottles and forwarded for analysis with the necessary particulars of the number of trees per acre, and the respective weights of the fresh and dried leaves and twigs.

The information so obtained would be of practical use and if the several District Associations would each take the matter in hand and agree to the future publication of the results in a tabulated form, the details would be of general interest to the planting community of the Island.

JOHN HUGHES, F.I.C.
Agricultural Analytical Chemist,
79, Mark Lane, London, E.C.

May 3rd, 1895.

INDIAN PATENTS.

Calcutta, May 2nd.

Applications in respect of the undermentioned inventions have been filed, during the week ending the 27th April 1895, under the provisions of Act V of 1888:—

For Improvements in Apparatus for withering Tea Leaf.—115 of '95.—Robert Thomson, of Kinning Park Engine Works, Kinning Park, in the Country of Renfrew, Scotland, Engineer and Tea Planter, for improvements in apparatus for withering tea leaf.

Specifications of the undermentioned inventions have been filed, under the provisions of Act V of 1888:—

For Improvements in or connected with Stoves or Apparatus for Drying Tea Leaf or other produce. —25 '95.—William Jacksons of Thorngrove, Mannofield, Aberdeen, North Britain, Engineer, for improvements in or connected with stoves or apparatus for drying tea leaf, coffee, grain or other produce. (Filed, 29th January 1895.)

The fees prescribed have been paid for the continuance of exclusive privilege in respect of the undermentioned inventions for the periods shown against each:—

For Improvements relating to Electric Traction.—56 of '91.—Alexander Login Lineff, Electrical Engineer, of 88, High Road, Chiswick, in the County of Middlesex (England), for improvements relating to electric traction. (From 10th March 1895 to 9th March 1896.)

Whereas the inventors of the undermentioned inventions have respectively failed to pay the fee within the time limited in that behalf it is hereby notified that the exclusive privilege of making selling, and using the said inventions has ceased:—

For a "Coffee-Peeler" to be called "The Hussani Coffee-Peeler."—63 of '90.—Mr. Syed Ameer Alee's invention for a "Coffee-Peeler" to be called "The Hussani Coffee-Peeler." (Specification filled 27th January 1891.)—*Indian and Eastern Engineer.*

THE LORANTHUS OF CEYLON.

A paper was read by Mr. F. W. Keeble entitled 'Observations on the Loranthaceæ of Ceylon,' in which country the author had made a short sojourn in 1894. After remarking that in Ceylon many species of Loranthus have large and conspicuous flowers, with the corolla-tube brightly coloured, more or less tubular and lobed, he pointed out that certain deviations from the typical regularity of the corolla-tube were correlated with the mode of fertilization of the flower by sun-birds (Nectarineæ), and this was made clear by diagrams and some excellent coloured drawings. Discussing the mode of distribution of the seeds, Mr. Keeble first quoted the views of Engler and Prantl, and the remarks in Kerner's 'Pflanzenleben' (English edition) on the dissemination of the European mistletoe, and then detailed his own observations in the case of tropical Loranthaceæ. The modes of germination of various species of Loranthus and Viscum were then described, as well as the curvature and growth of the hypocotyl, and the effect of contact on the latter and on its suctorial disc; the paper concluding with some remarks on the forms of fruit and seed of Ceylonese species of Loranthaceæ.—*Athenæum*, May 4.

A BIG DRIVE IN TEA.

[Here is a good example from the editorial page of the *American Grocer* of how a certain class of tea is pushed in America.—ED. *T.A.*]

Last year tea was lower in price than known in this country since 1850. The average import cost per pound was 15 1-10 cents. Appreciating this fact, and with a desire to make it thoroughly known to the public and, at the same time, bring credit to the tea dealer, Thomas Martindale & Co. offered the trade through the American Grocer, a blended tea known as the "Caricol blend, packed in barrels and put up in packages, at a bulk price of 15 cents per pound. To do this required a knowledge of the merits of all varieties of tea and how to combine them, so that the mixture would make an infusion which had aroma, body and good color in the cup. The offer, a generous one, was welcomed, as Martindale & Co. reported as follows: "We have never had such a quick response to any announcement we have made as we did from our two special tea 'ads.' of June 14 and 21 in the American Grocer. We received orders within five days of the publication from eight different States, and our shipping department was never pushed so hard in shipping teas before." So popular became the "Caricol" blend that Martindale & Co. took pains to improve and continue it as a feature of their business. The best proof of its popularity is the sale of thirty-two tons since its introduction in June 1894. They now renew their offer to American Grocer readers. This affords a grand opportunity to make a special drive in a meritorious article, at bargain prices. Such a move benefits a store, in awakening a new interest therein on the part of consumers; strengthening the confidence of old patrons; giving the store a reputation for being up with the times, besides advertising the business in a way which interests, attracts and gives publicity. Try it!

AN EXTRACT OF TEA.

Samples have been submitted to us of a tea extract made by Mr. James D. Cahill, who claims an experience of twenty-eight years as a tea tester and planter. We have not made a chemical analysis of these extracts, but so far as we can judge, by ordinary examination, they have a true flavor, and make a liquor of true color. The inventor of the process claims that his method dissipates a large proportion of the tannin, and that it in no wise reduces the quantity of theine in the tea. It is proposed to manufacture this extract in this country. There are many obvious advantages of having in small compass for easy carriage an extract of tea which will yield the true aroma and give a good body to the liquor, whether cold or hot. This extract will be made here at 127-129 Water street, where space has been secured to carry forward this new enterprise.—*American Grocer*, April 17.

DRUG REPORT.

(From *Chemist and Druggist*).

London, May 2nd.

CINCHONA—The London cinchona auctions which were held on Tuesday, an interval of six weeks having occurred since the last public (sales) were fairly heavy. Eleven brokers offered supplies, the aggregate of which was as follows —

	packages		packages	
Ceylon cinchona ..	468	of which	428	were sold
East Indian cinchona ..	1866	,,	1603	,,
Javan cinchona ..	110	,,	110	,,
South American cinchona	331	,,	165	,
Cuprea bark ..	499	,,	99	,,
	3274	,,	2405	,

The principal buyers in order of the quantity of bark purchased by them were:—The Agents for the American works (163,362 lb), the agents for the Frankfort-on-maine factory (105,786 lb), Messrs Howards and Sons (101,655 lb), the agents for the Brunswick factory (60,674 lb), the agents for the Mannheim and Amsterdam factories (34,988 lb), the agents for Auerbach factory (18,200 lb). Druggists bought 34,853 lb and 53,090 lb mostly Cuprea bark were bought in.

COCA-LEAVES—A parcel of 20 bales fine green broken Truxillo leaves had been declared for sale, but it was privately disposed of before the auctions.

KOLA-NUTS—Steady. A parcel of 40 bags fair brown washed kolas was bought in at 1s 6d to 1s 8d per lb, chips at 1s 4d per lb Of seven packages West Indian, one bold brown Grenada sold at 1s 6d. For another lot of four bags small to fairly bright pale kolas 1s 2d is asked a bid of 1s 1d being rejected.

NOTES FROM THE METROPOLIS.

I have been reading with great interest

MR. ARTHUR SINCLAIR'S

new book, "In Tropical Lands," from which you have extracted so fully in your columns recently. With regard to what Mr. Sinclair says as to the origin of the name *Musa paradisaica* for one variety of

PLANTAIN,

I may quote the following from Yule's *Hobson-Jobson*:—

The specific *paradisaica* is derived from the old belief of Oriental Christians (entertained also, if not originated, by the Mahommedans) that this was the tree from whose leaves Adam and Eve made themselves aprons. A further mystical interest attached also to the fruit, which some believed to be the forbidden apple of Eden. For in the pattern formed by the core or seeds, when the fruit was cut across, our forefathers discerned an image of the Cross, or even of the Crucifix. Medieval travellers generally call the fruit either *Musa* or 'Fig of Paradise,' or sometimes 'Fig of India.' The Portuguese also habitually called it 'Indian Fig.' And this perhaps originated some confusion in Milton's mind, leading him to make the Banyan (*Ficus Indica* of Pliny, as of modern botanists) the Tree of the aprons, and greatly to exaggerate the size of the leaves of that *ficus*. Col. Yule gives a number of quotations from writers of the 14th century and onwards illustrating this superstitious belief. He also shows who the other specific name for the plantain, *sapientum* (*i.e.* "of the sages") arose out of a misunderstanding of a passage in Pliny, who describes a fruit which Rumphius took for the plantain, but which was really the jak.

I notice that "Cosmopolite" writes to you regarding

A SUBSTITUTE FOR INDIARUBBER AND GUTTAPERCHA

which is a "new discovery" "in the forests of Surinam," and is called "bolaa." Surely *balata* is meant; and this is by no means a "new discovery," as reference to the past volumes of the *Tropical Agriculturist* will show.

SYMMETRY AND THE SUGARS.

A DISCOURSE ON ATOM LINKING.

We may safely affirm that to the major part of the fashionable audience which assembled in the Theatre of the Royal Institution, on Friday evening last, the utterances of the president of the Chemical Society were distinctly cryptic. Yet Dr. Armstrong spoke, almost pleaded, for his cause, with an enthusiasm and vigour which made it plain that he held the matter of his discourse to be of high importance if the nature of it was a little over the heads of the average scientific amateur. In a word, he was endeavouring to secure some recognition and appreciation for a small band of pioneer chemists who are working far away from the beaten tracks at some of the most fascinating problems which Nature presents in the "chemistry of the carbon compounds." School mathematics may fairly fit us for a conception of modern physical science, but school chemistry—the chemistry of the good old phosphorus and oxygen type—helps us in scarcely any sense to an understanding of the mysteries of "atom linking" and the marvels of "isomerism." The pioneer chemist is here slowly approaching the secret processes which Nature carries out in the laboratory of life. With a few of the simplest of materials—mainly carbon and water—Nature working with the vital processes of

animal and vegetable life can build up a thousand strange, unstable compounds which at present baffle the scrutiny of mere human chemistry. Carbon is peculiarly the element of the organic world. Organised material is almost exclusively made up of "carbon compounds"; but although the workings of the vital force which moulds them are still as great a mystery as Life itself, yet we know that the reign of the law of chemical combination is just as assured over the constituents of organised as over those of mineral matter. The chemist has never yet succeeded in forming a single organic cell. He is as far off as ever of constructing the long-expected lifeless protoplasm, but from the marvellous developments of the past 40 years he has the most lively hopes of some day building up a number of those organic food substances which at present have to be obtained for human needs by the sacrifice of other members of the animal creation. Dr. Armstrong did not, however, venture to forecast the future so far as this. He contended himself with the curious illustrations of progress offered by the wonderful family of "sugars." While the British house-wife would be content to classify the sugars into "lump," "moist," "Demerara," and so on, the British chemist would surprise her with the announcement that there are only sixteen possible sorts of sugar, and that those which she has enumerated are all one and the same. He would further remark that only eleven out of these sixteen have at present been met with in nature or prepared in the laboratory—for the fact need not be withheld any longer that the artificial preparation of the sugars is nowadays one of the commonest feats of commercial chemistry. Those other five "sugars" the chemist is as certain about as he is of his own existence. They probably have never yet come to light in all the long history of the globe we inhabit, but the chemist is serenely certain of their possibility, and will undoubtedly amuse himself one day by introducing them in a concrete form to the world. The main interest of the sugars is the proof they afford us of the wonderful practicability of the atomic theory. They may be all regarded as composed of carbon and water, but the secret of their diverse natures lies in the fact that these materials are built up either in different proportions, or, if in the same proportions, then in different ways. The atoms of carbon, oxygen, and hydrogen are like so many toy bricks, each fitted with mortices and tenons, so that they can be built up into edifices of varying shape. The hydrogen bricks have only one point of attachment, the oxygen have two, and the carbon four. A carbon brick requires either four hydrogen bricks or two oxygen bricks to satisfy all its links, or it may have two hydrogen and one oxygen bricks attached. Still more strangely, it may be compelled to go into partnership with only two hydrogen bricks, but in that case the chemist knows that the two spare links of the carbon brick are then joined to each other, for every link must in some way have a partner. But the business gets still more complex when instead of one carbon brick we have six of such bricks or various multiples of six, as in the case of the sugars. Dr. Armstrong illustrated this process of "atom linking," not by toy bricks, but with coloured balls with holes and pegs. Here we may have a whole line of carbon atoms strung together by two out of each of their four arms, and presenting on either side spare arms for the attachment of oxygen and hydrogen atoms in various symmetrical and unsymmetrical ways. It soon ceases to be a case of combining single atoms, and passes into one of grouping together special compound sets called "radicals," which, owing to this remarkable handiness of the carbon atom, are looked upon by the organic chemist just in the same light as the inorganic chemist looks upon his simple atoms. Every variation in the grouping means a new and probably quite distinct chemical compound, and yet not only are the ingredients the same, but may actually be in precisely identical proportions. Then, further, we have another strange thing in the so-called "law of symmetry." These carbon compounds vary according as the house of bricks built up is symmetrical or unsymmetrical. You may have exactly the same number of each sort of bricks in the house, but if you have given it a lop-sided appearance, then a solution of the sugar produced will twist out of its path a ray of polarised light. Some compounds possess a right-handed, others a left-handed twist. Pasteur found out that he could prepare two sorts of tartaric acid, one natural, the other artificial. Both seemed practically identical, yet Nature's tartaric acid gave a left-handed twist to polarised light while Pasteur's gave a right-handed. Later investigations have shown that this curious rule of lop-sidedness seems to run throughout the whole of organic chemistry, and that compounds may exist which are the image of each other, just like a right-hand glove is an image of its left. We have endeavoured to give some faint conception for popular purposes of the matter which Dr. Armstrong dealt with. Knowing that through investigation such as this the word is indebted to the discovery of almost every new compound of value that modern chemistry has given us, there will be no difficulty in agreeing with him as to its high value and importance.—*Daily Chronicle.*

ESSENTIAL OILS IN THEIR RELATION TO THE BRITISH PHARMACOPŒIA AND TRADE.

BY JOHN C. UMNEY.

Cinnamon Oil.—In regard to this, Mr. Umney submitted a table of results of analysis of bark and leaf oils, showing that the former are always under s.g. 1·030, and pure leaf oil above s·g, 1·050, so that the addition of the latter to the former raises the density, which is the condition that obtains in regard to Ceylon cinnamon-bark oil. The bark oil is further distinguished by having cinnamic aldehyde as the principal constituent (38 to 70 per cent in samples examined), while the leaf oil contains chiefly eugenol (80 to 85 per cent.), of which the bark oil contains only 4 to 8 per cent. The optical rotation of the pure oils is practically *nil* but leaf oils are dextro-rotatory. The following characters and tests seem those suitable for a new British Pharmacopœia:—Sp. gr. at 15° C., 1·024 to 1·030. Optically inactive. One drop of the oil in 5 drops of rectified spirit should not give more than a pale-green coloration with ferric chloride. The oil should not solidify with a solution of caustic potash. When treated with solution of bisulphite of soda solution, it should not yield more than 45 per cent. of non-aldehydes, equal to 55 per cent of cinnamic aldehyde.

Citronella Oil.—No opinion was expressed as to the officialising of this oil, but the following were mentioned as the factors for the pure oil:—Specific gravity not less than ·887, and the oil is soluble in 10 parts of 80-per cent. alcohol. —*Chemist and Druggist.*

A TALK ABOUT TEA AND TEA PLANTING.

Mr. Christison, late of Darjeeling, gave a very interesting lecture at St. James's Hall (Church of Scotland), East Dulwich Green, on Indian tea and tea planting in Darjeeling, to a large audience. The room was tastefully decorated with the Darjeeling planters' and the Nepaulese flags, and the lecture was illustrated by a number of lantern slides descriptive of all phases of planter life in Darjeeling. Mr. Christison, whose knowledge of all that concerns tea cultivation is founded on the experience of a lifetime spent as a tea planter, gave a most interesting account of the origin, history, and cultivation of tea.

TEA PLANTING AS AN OCCUPATION.

The latter portion of his lecture Mr. Christison devoted to the question of tea planting as an occupation for our young men, and on this point he spoke with his usual candour. In the course of his remarks he said: There is one topic more I feel I ought to touch upon before leaving this branch of my subject. I have very often been appealed to for advice by young men, and the friends of young

men, wishing to push their fortunes in tea. My advice has invariably been, and is: if you can make a livelihood, or find employment of any kind though poorly paid at home, by all means remain. Only leave Britain as a last resource. The difficulties of making rapid fortunes abroad have been multiplying, and the chances over the world are now pretty well equalised. If one finds himself compelled to push his fortune away from his native land my opinion is he should not turn to India, unless for a good Government appointment; but choose some country as New Zealand, Australia, or perhaps Canada or the healthier parts of South Africa, more congenial to the European constitution, where, if a fortune cannot be secured—which is the exception, not the rule, in these days—a home may be made for oneself, which cannot be done anywhere in India. The hill districts are the pleasantest to live in, but if the tea garden ranges in elevation more than 2,000 ft. (and I resided for twenty-eight years upon one which varied in elevation nearly twice that I doubt if they are so much more healthy, as represented, than the plains districts, and I believe the statistics of mortality, if carefully examined, bear this out. The plains districts of Assam, Cachar, and Sylhet, though more unpleasantly hot, especially at night, than most of Darjeeling and other hill districts, are more uniform in temperature, and, as I have remarked, little if at all less healthy. The Bhootan Dooars, being a recently opened-out plains-district, is, as I have said, still unhealthy; and all aspirants must bear in mind that though Darjeeling is reputedly a very fine climate (and the town itself is, to my mind, as fine as any in the world), the Darjeeling Terai —that belt of forest, or what was till recently forest, at the foot of the hills—is about the very worst climate in India. The prospects in tea are, I believe, much overestimated, and hence appointments are much run upon and difficult to obtain. With those who have tried the tea life, the rule has been to retire in a few years disappointed or broken in health, or to drag along penniless, and often in debt—life being, as it were, a continual struggle to earn a bare subsistence to keep body and soul together —the few successful men, holding on too long, mostly finding a grave sooner or later; retiring with fortunes or even a competency being the exception, as I have just said. No doubt a small proportion have come home with fortunes, or a moderate competency, but those have been obtained, as a rule, through the purchase and sale of land or investment in gardens under advantageous circumstances; but, alas, not a few of those who so retired lived a very short time, and seemed never to enjoy a day's real health after their return to their native land. Such is a fair though unvarnished statement of the case, from a careful study of the statistics of cases within my own knowledge and experience. Still, if any young man suitable for the work and life, energetic, industrious, persevering, and determined to work and get on, can meet with an appointment in a good concern, he is likely sooner to get into a position to support himself, and, if economical, even save a little, than in any other line I know. As yet tea appointments have not been thrown open to competitive examination, nor could they well be, as the tests ought to be character, industrious habits, and physical qualifications. The only way to obtain appointments is through knowing proprietors, directors, managing agents, or estate managers. As a proof that the supply of applicants far exceeds the demand many well-educated young gentlemen join tea gardens as what is styled "creepers," that is, giving their services for nothing, in addition to paying their own board—some actually paying a good round sum in shape of premium for permission to learn the business. Let such at least make sure that they are going to a good climate, and not find themselves set down in the Darjeeling Terai instead of Darjeeling Hills, as has happened. The main qualifications for the post, in order of importance, are a thorough practical knowledge of mechanical engineering, gardening or farming, building, surveying, accounts, tea-tasting, correspondence, medicine. But mechanical engineering is not now of such importance as many attach to it, because in all districts there is, at the present time, no lack of thoroughly qualified engineers devoting themselves specially to that branch—a smattering of engineering being, in my opinion, worse than useless. The same in regard to medicine, as you can understand, a little knowledge is a dangerous thing, and there are now numerous qualified practitioners, with native doctors under them, on tea gardens. From this it may be gathered that the duties of a tea planter are multifarious. He should have a practical head, and adaptability, so to speak, and it will be well if he can turn his handto anything, as will be illustrated later. To be a successful planter a man need not necessarily be muscularly strong, but he should be endowed with a ccstitution sound in every fibre, and have good powers of resistance to fatigue and contagion. He had well also be a good pedestrian and a fair horseman. The hours of attendance are long, though not always exhaustive, throughout the whole time of the operations; from 5 a.m. to 9 or 10 p.m. during busy and anxious times; but, as a rule, the more a man can be at his post, or at readiness to drop into it, and the closer his supervision, the better. During five to six months of the year Sunday labour and supervision is unavoidable in connection with manufacture. The life, as a rule, is a retired and solitary one, beset with peculiar temptations, and often wanting in plain comforts. To resist the climate, worries, and monotony of the life, a sound mind in a sound body is, in short, absolutely necessary; and no one can be a sucess unless he has his mind and heart in the work, and understands and has sympathy and a fellow-feeling for the natives. The management of the natives—which depends as much upon knowing not only their language but all their little idiosyncrasies of mind and habits—is a most important matter. On tea gardens, all Europeans, in relation to social standing and age, have the welfare, happiness, and comfort of numerous fellow-creatures in their hands to an extent to which there is no parallel in this country. Their influence and responsibility for good or evil, is therefore proportionately great. Every planter ought to remember his duty and responsibility towards a subject race in a heathen land, and so long as he is unswerving in the conscientious discharge of his own duties to his employers, just, honourable, and considerate in all his dealings with his people, and impresses upon them the dignity of all honest, faithful labour (a point in regard to which I fear the missionary is not always so successful as could be desired, any more than modern teachers in this country), his influence and examplo cannot fail to be immensely for good, and whatevor befalls he will have at least the satisfaction of having tried to do his duty.

The lecturer was warmly applauded at the close, and his exhaustive account of all that concerns tea should do much to make the public better acquainted with all that concerns the growth and use of the product.

During the evening Darjeeling tea, of excellent flavour, provided by Mrs. Christison, was enjoyed by the audience.—*H. and C. Mail.*

HOW TO MAKE HEAVY BOOTS SOFT AND WATERTIGHT.

To make heavy boots soft, well soak them with warm water before a fire, seeing first that there is no dirt on them. When the water has soaked right through the leather, work it about in the hands to make it as soft as possible. Then give the boots a coat of neats-foot oil, let them be a respectable distance from the fire and keep turning them round so that the oil may dry in all over. As the water dries out the oil dries in, and as it gets absorbed more oil should be applied. If the boots are very bad, let them lie by a day or two, and then repeat the above process with both water and oil, working the leather well with the hand. To waterproof them, after the oil has well dried in give them

either a coat of mutton fat, or of neatsfoot oil and bees-wax melted together, which, when cold, should be just a little firmer than ordinary dubbin.—From "*Work*" for May.

RESTORING COLOUR OF BROWN BOOTS.

First put the boots upon a pair of trees, or else the lasts they were made on, and in putting in the latter care should be taken, as the leather will no doubt have shrunk. If you have neither lasts nor trees, fill the boots out to their proper shape, or as near as possible to it, with pieces of thin soft paper or paddy pressing each piece in so tightly that a little pressure will not displace it; lace them, and so fill them right up to the top. Now, with a soft clean brush, give them a coat of lukewarm water; do not be afraid to let them get wet, and do not let them dry before you are quite finished with them. If they are not perfectly free from dirt, give them another coat, with a little yellow soap, and, when clean, wash this off with clean water. While they are wet give them a coat of very weak oxalic acid and water, using the brush freely, but hard. If this is not effective, add a little acid to the water, and, when the colour is brought down as light as desired wash the acid off with water and let the boot dry in a cool place. There are several washes sold for cleaning purposes which would no doubt be found suitable, such as Clark's, Brown's, Simpson's, etc., but the acid is cheapest, it costing only a penny. After the boots are dry, take them off the trees and work them about a bit to soften the leather. This will help to lighten them, as it works the water-stain out. Then give them a good cleaning with white or pale brown boot cream. If they are calf, and not Russian leather, be a little more sparing with the water.—Ibid.

MR. HUGHES ON MANURING TEA.

Calling upon Mr. John Hughes this week in the hope of learning something from him as to the prospect of getting your tea planters to manure their tea land, he favoured me with the perusal of an article he sent the *Observer* on the subject by the last mail. The practical character of the recommendations made in that article struck me very strongly, and no doubt it will be appreciated by your readers when published. Especially was I struck by the unanswerable character of Mr. Hughes' argument upon the case of tea plants which shoot their tap roots down to a depth at which manuring would be useless. "If," Mr. Hughes observed, "a tree be vigorous enough to do this, surely it is evident that the soil giving that vigour does not require the application of manure." But a report comes to me from Ceylon that a well-known planting authority is said to have abandoned manuring on his estates. I have not yet been able to verify this statement, or, if it is to be verified, to learn the reasons leading to the adoption of the course alleged. Perhaps I may succeed in obtaining the information before next writing. This report was mentioned by me to Mr. Hughes; but he had heard nothing of such a resolution having been taken.—London *Cor.*

THE SEASON IN MADRAS.—Yesterday the Board of Revenue telegraphed to the Government of India for the week ending the 18th inst. as follows:—"Good seasonable rainfall in the Circars and Central Districts, moderate elsewhere, except Bellary, Cultivation is proceeding where there has been rain. Standing crops are generally fair or good. Pasture is scarce, but fodder is sufficient, and cattle is in good condition. Prices are steady or very slightly easier."—*M. Mail*, May 23.

SCOTTISH CEYLON TEA COMPANY, LIMITED.

REPORT OF THE BOARD OF DIRECTORS,

To be presented to the shareholders at their sixth annual ordinary meeting, to be held at the offices of the Company on 16th May 1895, at 12 noon.

The Directors have now the pleasure to submit to the shareholders the accounts and balance-sheet for the year ending 31st December 1894.

		£ s. d.
The net profits for the yearare £9,338 6s 7d, which, with the balance of £611 4s 2d brought forward previous year, makes a total sum available for distribution of		9,949 10 9
An interim dividend on the ordinary shares of 5 per cent (free of Income Tax) paid in September 1894 absorbed	£2,050	
Dividends on the 7 per cent Preference Shares have also been paid, amounting to	630	
It is now proposed to pay a final dividend of 10 per cent (free of Income Tax) on the Ordinary Shares, making 15 per cent for the year, absorbing	4,100	
To add to Reserve Fund (which will then stand at £5,000) ..	1,000	
And to write off for depreciation on Machinery and Buildings ..	1,500	
		9,280 0 0
Leaving a balance to carry foward to next account of		£669 10 9

The estimated out-turn of tea from the Company's estates for 1894 was 635,000 lb., and notwithstanding a spell of unseasonable weather, the actual amount secured fell short of that quantity by only 5,845 lb., the total crop amounting to 629,155 lb., which under the circumstances the Directors consider very satisfactory.

The Company's teas continue to maintain their prominent position in the London market, the gross average price obtained for the season being 9·233d, against 9·199d per lb. for 1893.

The average yield per acre was 407 lb., against 391 lb. in 1893, and 336 lb. in 1892.

The Ceylon Manager reports that all the Company's properties are in good heart, and the estimates for 1895 give promise of continued good returns.

There has been no increase during the year in the Company's acreage, which remains at 1,963 acres. The tea bearing area also remains unaltered at 1,544 acres.

The Directors would again take this opportunity of recording their appreciation of the services of both the Ceylon and London staffs.

JAVA CINCHONA DIVIDENDS.

The annual meeting of shareholders in the Coffee and Cinchona Company Pagilaran, of Java, was held at Amsterdam on April 30th. From the report then submitted it appears that on December 31st last the company's plantations contained 2,040,000 cinchona trees and 260,000 coffee trees. The output last year amounted to 1,998 bales of cinchona containing 150,346 kilos, with an average of 5·64 per cent of sulphate of quinine. In 1893 the output amounted to 1,817 bales containing 132,446 kilos of an average of 5·34 per cent. The coffee output is very small, the company practically depending upon cinchona. The result of last year's trading has been a loss of 9,287 florins, which, added to the loss of previous years, makes a deficiency of 94,064 florins. It is pointed out that a very small improvement in the cinchona prices, which last year only realised an average of 3·47c. per unit, would have been sufficient to convert the loss into a profit.—*Chemist and Druggist.*

PROFESSIONAL "RECRUITERS" OF COOLIES.

Amongst other matters which engaged the attention of the Indian Tea Association at their last meeting was the question of the registration and licensing of professional recruitors. The necessity for this step has been strongly urged by Mr. T. Buckingham, Chairman of the Assam branch of the Association, but the mattor is to be allowed to stand over, pending the result of the protest that has been made by the Committee against the introduction of the revised draft rules in their present form.—*Pioneer.*

PLANTING AND PRODUCE.

(*H. and C. Mail*, May 10.)

THE BUDGET.—The free breakfast table idea does not make much headway. The usual expectations formed about the tea duty at this time of year were indulged in, but nothing came of them. It is true the Chancellor of the Exchequer laid great stress on the consumption of tea, and gave figures to prove the importance of the demand for tea, but he left the tea duty where it was. The main fact about the increased consumption of tea is that last year it was £94,000 in returns, and 5,650,000 lb. in weight, above the previous year. And no less than 86 per cent. of it comes from our own dependencies in India and Ceylon, as against 8 per cent. thirty years ago. Coffee, on the other hand, is decreasing, and one reason for the smaller consumption is no doubt the utter ignorance on the part of the ordinary householder as to how it is made. Tea is comparatively a simple affair, but simple as it is there are numbers who do not know how it should be made; and as for coffee, it is exceptional to find it drinkable.

JAVA COFFEE.—The cultivation of coffee in Java is rapidly increasing. Consul Maclachlan of Batavia, reports that the satisfactory results from the cultivation of the Liberian bean, both in Mid and West Java, become year by year more apparent as the principal difficulties attending the preparation of this coffee for the market are gradually being successfully surmounted. As a result, a marked improvement in the appearance and quality of the coffee is noted, and its favour is becoming more and more assured. The continued recurrence of the so-called "leaf" disease in the Java coffee on low-lying lands, from which the Liberian still preserves comparative—though by no means entire—immunity, causes more confidence to be felt in the latter, and many lands which have suffered most severely from the ravages of this disease in the Arabian plant are being replanted with Liberian. It has been decided to give up the Government cultivation of coffee in the Krawang Residency, and on January 1st, 1895, the law rendering the delivery in that district to Government obligatory was repealed.

NORTH BORNEO.

Mr. Leicester P. Beaufort, M.A., B.C.L., Barrister-at-Law, has been appointed Governor of British North Borneo, in succession to Mr. Charles Vandeleur Creagh, C.M.G., whose term of office will shortly expire. The newly-appointed Governor will be welcomed as an old friend and the appointment of one we all know will not be the less appreciated when it portends the benefit of having a successor to Governor Creagh who has had the advantage of working under him and who will thereby be enabled to continue a policy which has brought the country to its present position through times of great depression.

Thirty-two Japanese and fifty-eight Chinese Agriculturists arrived by the ss. "Memnon," paying their own passages. Some of those new settlers brought their wives, the party including 5 Japanese and 11 Chinese women and nine children Settlers of those nationalities are now arriving in small numbers by every steamer from Hongkong.

Mr. Sankara Narayana Pillay is arranging to bring Tamil settlers from Negapatam to this country, and Mr. Ramasamy formerly of the Government Secretary's Office is reported to have left Madras with 30 Tamils for whom the land has been selected in P. Dent near Mempakul. A second batch is expected shortly to open a settlement near Kudat. It is satisfactory to learn that the protracted correspondence with the Indian Government which commenced in 1889 is at last likely to lead to some practical result —*H. and C. Mail.*

COFFEE PLANTING AT SELANGOR.

A draft prospectus of the Friendship Estates Company Sungei Ujong, Selangor, shows a Capital of £5,000 divided into 500 shares of £10 each. The Company will take up some 1,000 acres of land—the larger portion of which is not far from the Kuala Sawah Station, on the Sungei Ujong line—for planting coffee. It is proposed to at once open up 300 acres, and 200 more will be opened up gradually. Tables shewing estimated expenditure, receipts, profits, etc., have been drawn up, and "calculations are based on the sale of coffee at $30 per pikul, whereas the present price is $45 to $47; should this price be maintained, profits will be nearly 50 per cent. greater than shewn."

AN UNPROSPEROUS TRAMWAY.—The following will be of interest to towns in the east which are contemplating the construction or extension of tramways. Here is what the *Singapore Free Press* says:—There is considerable danger that the Rangoon Steam Tramways will collapse unless immediate attention is paid to the financial position of the Company. Out of R15,452 earned past half year R15,000 had to be paid to debenture holders.

Letters Patent have been passed appointing Mr. A. J. Leach to be a Puisne Judge of the Straits Settlements.

"THE NUWARA ELIYA PICK-ME-UP."—A facetious and Epicurean correspondent of the *Singapore Free Press* writes:—"The latest thing in the way of pick-me-ups in Nuwara Eliya, the land of such potent spells, is termed the 'Cherry Blossom.' It consists of a half soda, a whole brandy, one cherry brandy, and a Benedictine, whisked up with a brush in cocktail fashion. It is good, though a trifle sweet for a morning pick-me-up. A better one is a 'baby' dry Monopole poured into a glass round which a red chilly has been rubbed until the glass is nicely coloured. It should be taken off with the head on it. Nothing equals it; but in these days of depreciated dollars even 'baby' Monopoles are a trifle expensive."

THE MILITARY UNIFORMS ORDINANCE.—Regarding the Military Uniforms Ordinance applicable to Ceylon the *Singapore Free Press* says:—"A similar ordinance will, it is believed, be in due time introduced here in consonance with legislation already passed in the Imperial Parliament. Some local employers of syces got up in quasi-military style will have to revise their liveries when this bill comes to be enforced here."

THE NEW BRITISH DOLLAR.—Specimens of the new British dollar will probably be issued from the Bombay mint about the end of the current month. It is stated in Hongkong that on every thousand new British dollars that the local Banks will import and pay out they will lose 61 cents. The new coin, it is urged, should not be permitted to be "chopped," as is the custom among Chinese shops in Hongkong, for it would be to the interest of trade between Hongkong and the Straits Settlements to have interchangeable currency, which would not be the case if dollars be "chopped" as it would then not be legal tender here.—*Pinang Gazette.*

JAPAN TEA TRADE.

The Tea trade has been opened by small quantities of new leaf, and the "City of Peking," which sailed today, took the first shipments. These, however, are not of much account, either in regard to quality or quantity, and teamen are not well pleased with the "cup" of what has so far been brought to market, though the parcels of leaf that have been sent to Yokohama have been eagerly bought up at high figures when compared with the opening rates of last year.—*April 27th.*

The Tea trade will very shortly be in full swing, arrivals are already coming in more freely, and in another few days some heavy parcels of leaf may be expected. Prices have been somewhat irregular so far.—*Japan Mail*, May 3rd.

CEYLON TEA AND THE "COMMITTEE OF THIRTY."

To the Editor "Ceylon Observer."

Kandy, 27th May 1895.

SIR,—I beg to enclose Minutes of Proceedings of a meeting of the "Thirty Committee" appointed to administer the proceeds of the Export Duty on Tea levied under Ordinance No. —of 1894 for increasing the consumption of Ceylon Tea in foreign lands, held at Kandy on Saturday the 25th day of May 1895, at 7-30 a.m. —I am, sir, yours faithfully,

A. PHILIP.

Minutes of proceedings of a meeting of the "Thirty Committee" held at Kandy, on Saturday the 25th day of May 1895, at half-past seven in the morning. Present:—Messrs. A. Melville White (Chairman); A. Philip (Secretary); R. S. Duff Tytler; W. D. Gibbon; A. C. Kingsford; A. W. S. Sackville; Hon. Mr. Giles F. Walker.

The notice calling the meeting was read. The minutes of procedings of a meeting of the "Thirty Committee" held at Kandy, on Saturday the 20th April, 1895 were submitted for confirmation. Resolved:—"That they be, and they hereby are confirmed."

MISCELLANEOUS CORRESPONDENCE.—Read letter from Mr. Geo. Greig, resigning his seat on the Committee, on leaving for England. Submitted letters from the National Bank of India, Limited, and memorandum from the Treasurer of the Colony. Read correspondence with Government on the subject of the disbursement of funds, under section 3 of Ordinance No. 4 of 1894, also letters from Sir E. Noel Walker to Mr. Philip.

Resolved.—"That in view of the apparent alteration in the circumstances and position of this committee brought about by the Colonial Secretary's letter of May 14th 1895 the expenditure indicated in the following memorandum be submitted to H.E. the Governor in Executive Council, and his approval thereto requested."

MEMORANDUM REFERRED TO.—Secretariat:—Approval of all necessary expenditure incurred in and about the carrying out of the provisions of the Ordinance No. 4 of 1894, including the charges connected therewith, say, office, clerical, accountant, peon, &c. &c. services; Tea samples, Pamphlets, Printed Matter, Photographs, and such like: Approval of expenditure on tea sent as samples and for distribution to the trade, and others; also cost of printing, lithographing, despatching &c. &c. pamphlets, and other printed matter; also photographs, as authorised by the Committee. Telegrams and Miscellaneous:—Approval of disbursements for all telegrams &c. despatched on, or about the business of the "Fund"; and of the resolution of the Committee that the sums hitherto paid by the Standing Committee of the "Ceylon Tea Fund" to the Planters' Association be in future defrayed by the "fund" Grants of Tea &c:—Approval of the Committee's grant of Ceylon Tea for free distribution in the Transvaal. Approval of the Committee's grant of Ceylon tea for free distribution in San Francisco. Approval of payment of certain charges on Ceylon tea for free distribution in Switzerland. Approval of the necessary disbursements in obtaining a complete analysis of Ceylon Tea-Black (and green, if available,) and of black and Green Teas (China and Japan) generally used in America, for the purposes of the Committee under the Ordinance.

CEYLON TEA IN SAN FRANCISCO.—Read letter from Mr. John Leechman, conveying his thanks to the Committee, for the grant of 1.000 lbs. of Ceylon Pekoe Tea in 4 oz. packets, for free distribution in San Francisco, and his assurance that he will take pains to distribute the packets where they are most likely to do good service in increasing the interest among the public in Ceylon Tea and in creating a wider appreciation of their excellent qualities.

CEYLON TEA IN CALIFORNIA &c.—Read letter from Messrs. Castle Bros, San Francisco, with reference to the grant of tea made to Mr. J. R. Foster.

Read letter from Mr. P. Schooley, Homestead, P. A. offering to act as a Representative, or agent, and enclosing references. Resolved:—"That the letter be referred to the Committee's Agent in America, when appointed."

REPRESENTATIVE TO AMERICA.—Read letter from Mr. Wm. Mackenzie dated New York 21st March, London 5th, 8th, 12th, 26th April, and 3rd May. Resolved:—"That Mr. Mackenzie be thanked for the services he has rendered to the Committee as their Representative."

APPOINTMENT OF A REPRESENTATIVE TO CARRY OUT FURTHER WORK IN AMERICA.—Read letter from Mr. P. M. Short. Resolved.—"That Mr. Wm. Mackenzie be appointed as the Representative to carry out further work in America, and that the Chairman be authorised to arrange with Mr. Mackenzie the question of salary."

LETTER OF INSTRUCTIONS TO THE CEYLON REPRESENTATIVE TO AMERICA.—Considered draft letter of instructions to the Ceylon Representative to America in regard to carrying out further work. Resolved:—(I) "That as amended it be adopted." (II) "That the resolution appointing Mr. Mackenzie, as Representative to America, and the letter of instructions as approved be forwarded to Government stating that the action, which the Committee purposes taking in America will be on the lines contained therein and asking for the approval of H.E. the Governor in Executive Council.

Read letters from Mr. S. Bierach.

Read letters from Mr. Thomas A. Cockburn.

The "Thirty Committee" then adjourned.

A. PHILIP, Secretary, "Thirty Committee."

NYASSALAND COFFEE CO., LD.

A meeting of the Directors of the Nyassaland Coffee Company, Ld., was held yesterday in the office of Messrs. Julius & Creasy. The business before the meeting was of a formal character regarding the incorporation of the Company. It was reported that some delay had occurred owing to certain title-deeds not having come to hand, but it was mentioned that this would be rectified at an early date.

KEROSENE OIL AS A DEODORIZER.—An old Colombo resident reports to us the great success he has experienced with kerosine oil as a deodorizer—a very little thrown into a cesspit, or otherwise used, is quite sufficient to absorb all evil odours &c.

DR. A. S. LETHBRIDGE, Indian Medical Service, has filed the specification of an invention for "making glazed black tea, whereby a waste product in the ordinary process of tea-making is utilised, and a tea is produced which has a much higher commercial value than the tea produced by the ordinary methods of manufacture now in use.—*Madras Times*, May 30.

Correspondence.

To the Editor.

MANY-HEADED PALMS IN THE JAFFNA PENINSULA.

DEAR SIR,—The following additions to your list of many-headed palms may be interesting. There exists at a temple near Manipay a coconut tree with two heads branching at a height of about twenty-five feet and both are very fruitful. The only other instance, which I know of, is a young tree near Kankesanturai with two heads. The enclosed photograph represents wonderful fruitfulness in the coconut plant, which I saw last week at Punnalai, at the extreme western point of the Jaffna peninsula. From the man in charge of the garden which belongs to the Magistrate of Kayts, I ascertained that the plant had only one shoot in an abnormally big nut when brought with others from the plant offerings of the Temple of the Serpent at Aynativoe 18 years ago. Very soon it began to put forth different shoots which at one time numbered 26. I counted about 16 at the time of my visit, some vigorous and others as small as plants a few months old. The man told me that a Cobra has been taking its abode in it, which those in the garden hold in sacred awe. About two miles from this spot near the Jaffna College, I saw, many years ago, in a small garden, several palmyra trees some with two and some with as many as five heads.—I am, yours truly, L.

[The photograph shows quite a grove of foliage and branches all apparently belonging to the one young palm.—ED. *T.A.*]

HYBRID COFFEE.

SIR,—It is a pity no endeavours were made to secure a hybrid coffee several years ago. Owing to the present and future high prices of any variety of coffee, the cultivation of a good hybrid would have found much favour just now. The Maragogipe coffee sent by Mr. Munton to Andella Estate in Kegalle is thriving. There are besides on that estate about 2 doz. Arabian trees grafted on Liberian stumps with a first crop on them. Liberian coffee is also planted amongst them, the object being by the aid of ants and bees to secure fruit, a percentage of which may possibly give hybrid plants. I send you a dead "grafted tree" (cause of death unknown) for inspection. On the living trees the peculiar *dark* bark of the Liberian appears in the Arabian grafts in streaks. In other respects there is nothing different in them from ordinary Arabian. W. P. F.

P.S.—Of course there are distinctive types in the Liberian, as regards shape and size of leaf and fruit and bean. In a very large nursery of Liberian plants, in 3 different spots, 3 plants have come up, quite Arabian in type so far. They will be looked after, as the Liberian seed in cherry came from a place where Arabian also grew. When cleaning the cherry, not a single Arabian cherry was found, and *all small cherries* were rejected.

[Up to the time of the advent of leaf-disease planters were so satisfied with the Arabian trees that experimenting in grafting never occurred to them any more than painting the lily. But after the visitation of that scourge it would have been well, as "W. P. F." remarks, if some experiments had been made in scientific grafting. We very much question, however, that coffee will naturally hybridize as tea does, as Liberian coffee has been long enough cultivated with and near Arabian, to have produced some results. The dead specimen sent to us shows a successful graft of Arabian on a short Liberian stump, very close to the roots, and, our correspondent says, "those still living have a first crop on them," which is a very encouraging circumstance. But being mules themselves, and the hybridization of coffee being apparently difficult through the blossom only, it may be feared that they will not readily hybridize with the Liberian trees growing near them. We shall, however, be glad to hear further on this interesting subject from W. P. F.—ED. *T.A.*]

THE LABOUR QUESTION.

DEAR SIR,—Without in any way wishing to run down the planter I think that he has in many instances himself to thank for the annually recurring scarcity of labour in the spring months, which is to my mind to a great extent the result of his own improvidence. Those who have travelled about much in the Planting Districts will, I think, agree with me that speaking generally, all through both the Cinchona and Tea Planting Enterprise, people seldom had enough plants in their own nurseries for their requirements, though in many cases each knew nine or twelve months before the planting season began what amount of land he intended to open. This is most strongly evidenced in the case of cinchona by the large sums of money made by many who grew nurseries chiefly and solely for the sake of selling plants. In the case of tea, the scarcity of plants in the country during each planting season has been less in evidence owing to the possibility of planting and at stake.

In like manner, every spring one has found a general scarcity of Factory accommodation all over the country, save on such estates as are fully factoried, which I maintain might in most cases have been avoided had the planter exercised a little more forethought, and agitated for extension at the proper time, say a year before it was actually required instead, of waiting until he was so badly burst that immediate assistance was impossible. My upcountry friends will no doubt answer this last accusation by a question: Where is the much-abused V. A ? But the V. A. has not to work the factory and I do not think that he would refuse to support any reasonable application for extension if it were proved necessary by the Superintendent who has every opportunity of gauging his own requirements, and is the proper person to agitate.

In the question of labour, the planter is generally left very much to himself ; yet how many of them, the younger generation particularly, take any thought for the morrow ?

My experience of the last three years is this :

1. A sufficiency of labour from July-December (inclusive).

2 A plethora of labour in January and February.

3. A scarcity of labour from March-June.

Instead of trusting in Providence to give them coolies during the pinch and making no calculations as to future requirements, I would advise that planters one and all should adopt the following suggestions :—1. Make such coolies as want to go to the Coast in the spring give in their names, say in October, and endeavour with the assistance of their kanganies to make Ramasamy stick to his word, which is to my mind not an impossibility as he is very much like a school-boy.

2. Pay off all such coolies as are going to the Coast for any length of time in January after Pongal.

3. Send money to the Coast as early as possible to get coolies to replace those who are leaving and for any further requirements as estimated.

I do not deny that there are planters who have adopted these suggestions already ; but I do maintain that they are not generally practised throughout the country. I do not guarantee that their general adoption would obviate the present scarcity of labour, but I do maintain that a trial of the system could do no harm and might possibly do good and would at any rate be better than the present happy-go-lucky method of trusting in Providence and crimping your neighbours' coolies too prevalent in some of our planting districts.

The difficulties that I foresee in working on the above system are, first, of getting the recruiting kanganies to start for the Coast early enough to be back by the 1st March, and the other of limiting the number of coolies who really go to the Coast to those who give in their names in October. If coolies knew that having given in their names they will be turned adrift in January they will no doubt refrain from giving them in at the time and will demand to be paid off on a month's notice certain, and I admit that the influence of the kangani alone

would prevent them from playing tricks of this nature; but s' all we ever get rid of the kangani system?

If the coolies who are going to the Coast could be paid off in January, those who remain behind would get more regular work in the slack months than they do now, which would be an advantage, as in my opinion there is nothing so demoralising for the cooly as working short time? Where we are so severely handicapped in the matter of labor now-a-days, is, that in the first place we require our labor most at the very time when the coolies are on the move towards their homes in India, whereas in the coffee days we could well dispense with labor after crop was in and pruning finished, in the western districts at any rate; and, secondly, because tea estates in full bearing cannot possibly employ the labour, which they require to secure the Spring rushes of leaf, steadily throughout the rest of the year, and this difficulty will be intensified when all our tea is in full bearing and is far more serious than it was in the days of coffee, when pruning and handling meant an annual expenditure of from R15—20 per acre against say from R4—5 in the case of tea, allowing for an average of two prunings in three years.

The Labour Question is not by any means an easy one to solve, and it certainly requires a pull all together to place it on a better footing than it is at present. We shall probably go to sleep over it now until next Spring, when we shall wake again, let us hope, to tackle it, not like Mark Twain's ants as we appear to be doing at present, but on the best of the many systems which may have been propounded in the meantime, and at any rate mindful of the motto

"UNITAS SALUS NOSTRA."

VARIOUS PLANTING NOTES.

COFFEE IN BRAZIL; ROOM FOR EXTENSION.—As an inducement for the construction of a branch of the Sorocabana railway to Lenções, S. Paulo, we read that the municipal council of that place reports that the Municipality now possesses 8,520,000 coffee trees, of which 4,245,000 are from three to six years old, and the balance under three years. The area suitable for coffee still uncultivated amounts to sixty-million alqueires of land.

INDIA'S TRADE WITH THE FAR EAST.—In concluding an article on this subject the *Madras Times* says:—

It is in China, therefore, that we may expect to find our keenest trade rival in the Far East, at least in regard to cotton spinning. Especially will this be the case if Japanese energy influences the development of cotton-spinning *in China*. India's greatest hope lies, first, in the possibility that Japan will try to make herself the medium of supplies to China; and, second, that "honest money" may yet become current in India once more, in place of the inflated, though still undersized, Rupee of the present day.

SILK INDUSTRY IN ENGLAND.—In view of the depression in agriculture and in the textile industries, Mr. A. R. Sennett's suggestion in the London *Times* that silk culture should be resuscitated in England is worth consideration. In 1694 the Huguenots had in Canterbury alone a thousand looms, giving employment to some 3,000 people. By the skill and perseverance of Pasteur, silkworm farming has now been placed upon a sound scientific footing. It might be reintroduced without a great capital expenditure, and would give remunerative employment to a large number of men, women, and children. The scheme is one says the *C. World*—that could be materially assisted by large landed proprietors planting mulberry trees upon their estates and farms, especially in counties possessing such temperate and equable climates as Devonshire, Somerset, Hants, Sussex, and Kent.

PLANTING IN TRAVANCORE.—The Report of the Planters' Association shows the statistics of the three divisions for the year ending 30th June 1894 as follows:—

	Cinchona.	Tea Total.	Coffee Total	Cultivation Total.	Forest and other Land.	Grand Total
	acres	acres	acres	acres	acres	acres
Southern ..	60	5396	2018	7474	16507	23981
Central ..	110	3579	1288	4977	4825	9802
Northern ..	1768	357	1075	3200	33995	37195
	1938	9332	4381	15651	55327	70978

We shall have later returns in our Directory.

"CHEAP TRANSPORT AND HOW TO GET IT."—We call attention to the third of Mr. Davis-Allen's practical and informing papers. It will be observed from his summing-up that he is by no means dogmatic, though with a strong leaning to the "narrow gauge" for economic purposes. We have no doubt that Mr. Davis-Allen could say much about the evils of a "break of gauge" where a continuous line is concerned; and that is the reason why we advocate a beginning at Colombo, and independently of the existing broad gauge system, of the proposed metre-gauge Northern line, and also that a Kotte-Kelani Valley line that start from the capital instead of as a branch from the Kandy line. Lord Dalhousie, when Viceroy in 1855, fixed the 5½ feet gauge for India, and Sir Henry Ward in Ceylon naturally followed his lead in 1858. In our first Memorial for Railway Extension from Nawalapitiya to Haputale, we expressly urged that the line should be on the 3½ feet gauge, and were backed by Messrs. Tottenham and Cruwell. How it came about that Governor, Engineers and all concerned, became convinced in 1877 that there should be no break at Navalapitiya, and afterwards in 1885 at Nanuoya, is too long a story to tell now. We know it is a sore subject with some in Uva; but it simply came to this in Sir Arthur Gordon's time, that unless we followed the lead of that very able as well as autocratic Governor—who would have nothing to do with a new Survey or break of gauge at Nanuoya—we should not have got a locomotive line sanctioned into Uva in his day, nor for many years after. Governor Gordon as good as "rebelled" against the Colonial Office, in order to force the sanction of the long-delayed Haputale section.—Mr. Davis-Allen speaks of "quarter loads" over our railway in 1893. We should like to know if this applies to the upcountry line? We scarcely think so. Goods traffic between Colombo and Kandy at any rate used to be specially heavy and concentrated, and we fancy it must be growingly so on the Dimbula-Uva line.——With reference to Mr. Davis-Allen's second paper in a recent *Observer*, with its striking deliverance as to to the special effect of sharp curves on Working Expenses—a fact almost ignored by Engineers up to ten years ago or so when the late Professor Fleeming-Jenkin, Professor of Engineering in the University of Edinburgh (of whom Mr. Davis-Allen was a pupil) first brought it out prominently—it is worthy of consideration whether there should not be an examination of our older Ceylon lines in order to see if any curves could be profitably eased or straightened—if that be possible;—and this might be a matter in which an inspection and report from Mr. Waring would be of practical value.

MR. CHRISTY OF LONDON ON TEA SWEEPINGS AND TEA SALES:— GREAT DEMAND FOR CAFFEINE:—400 TONS OF TEA ALLEGED TO BE WASTED!

Mr. T. Christy's efforts to put a stop to the iniquities of some of the London warehousemen and wharf owners are widely known and highly appreciated, both in India and Ceylon. To his exertions there can be no doubt that we are primarily indebted for the issue of the late Customs Order and for the beneficial results that have already followed it. It appears certain that the Customs at home are now fully alive to the importance of this matter, and that they are not likely to allow it to drift back again into the former bad practice. But when discussing this subject with our London correspondent, Mr. Christy took the occasion to review the whole system under which at present our teas are placed upon the London market. This system he believes to involve much injustice to the growers of tea, and we strongly recommend what he has said to the consideration of our own planters and of their representative body, the Planters' Association. We think it probable that Mr. Christy could hardly have insisted so forcibly as he now does upon certain remedial measures open for their adoption, had the state of the tea market remained as it has hitherto been for years past. But if our London correspondent has rightly understood Mr. Christy's view, a great change has now come over the late situation. The demand for Caffeine is enormously increasing, so much so, indeed, that tea sweepings can no longer supply the raw material for its manufacture. The consequence has been that the commoner teas are being largely bought to supplant that source of supply. So large are now these buyings, that late sales in Mincing Lane have been the scene of most unusual excitement, and the lower grades of tea have been cleared off as fast as they could be put on the market. This fact, Mr. Christy observes, puts the tea planters in a position to dictate their own terms as to procedure at home between the landing and disposal of their teas. It is well-known that for years past the complaints as to home charges on tea have been constant and strong. But power to remove the causes for these complaints has hitherto not been possessed, and planters have had to submit almost without remonstrance to whatever course the home agencies chose to follow and to pay the charges consequent upon that submission. But if we may accept Mr. Christy's opinion, the position has been reversed by the new demand above referred to. It is now the planter's turn to dictate how his tea shall be dealt with after its arrival in England. Any opposition that may be offered to his dictation, we are told should be met by a threat to sell all teas locally. That it would be feasible to carry this threat into effect is very doubtful, although something might be done in that direction. But Mr. Christy thinks that the threat alone would suffice to extort compliance. It has always seemed to us that there was much in the procedure as to reweighing and rebulking that should be susceptible of improvement. We are quite content to accept Mr. Christy's insistence that both are entirely unnecessary. If our planters are also of that opinion, the sooner they take steps to act with reference to this matter the better. It certainly does seem monstrous, as Mr. Christy has expressed it, that the value of no less than 400 tons of tea is annually lost to our own and Indian planters by persistence in a system that is believed to be wholly unnecessary.

Since the above was written, later news has come to hand rather weakening Mr. Christy's view of what the planters can do by way of reform; but certainly, it is undoubted that there is ample room for amendment in the present system.

STEAM BOILERS IN TEA FACTORIES.

(Communicated.)

The leading article in *the Observer* of May 1st suggests a few notes which may possibly be of novelty and interest to steam users in tea factories. The Perkins' boiler is an invention several years old, but which has I believe not been adopted to any great extent. The writer remembers some years back seeing a boiler and engine by this inventor which had been originally in a paddle steamer on the river Tyne, and were afterwards in operation in the works of a large engineering firm. It may be briefly described as a boiler consisting entirely of small tubes screwed together, supplying a triple expansion engine, and working as would be expected with a very high economy of fuel. The gauge glass (if the expression be allowed) was constructed of mica, as glass would not be able to resist the decomposing action of water at so high a temperature.

It may be worth pointing out that roughly speaking the efficiency of a Steam Engine depends on the difference of temperature obtainable in the steam before and after doing its work in the engine, and Engineers have been led in pursuit of this principle into the construction of high pressure boilers and triple expansion engines. Perkins' 400 lb. pressure combination was a very bold attempt to carry this out, and was possibly rather in advance of its age. There are however several water tube boilers in general use working very successfully at less ambitious pressures. The rationale of putting tubes in boilers is of course the increase of heating surface. In the *tubular* boiler the flame passes through the tubes, the water being outside; in water tube or *tubulous* boilers the reverse principle obtains, and it becomes a matter for careful consideration, how far the difficulties of incrustation may be met in a boiler of the latter type. Regarding the comparative cost of transport of different types, unless the expense of transport be very high indeed it is not easy to see where the probable economy will come in in using a boiler of a higher first cost than those of cheaper design. The greater difficulties of joints and connections with high pressure boilers and engines, and the higher training necessary for their management, [though boilers of this type are of course less liable to disastrous explosions,] will probably outweigh the prospective advantages of high pressure steam in the eyes of a careful planter. Simplicity of repair is of course a factor of considerable importance in places remote from the refinements of mechanical civilisation.

The question of boiler cleaning has been cropping up lately in the Ceylon Press, and the article already quoted ends with a timely warning about the lively time coming for steam users here, when their boilers have come to years of decrepitude and decay. I believe I am correct in saying that organised boiler inspection is little known here. The simplest way to insure this being properly done is to have boilers insured. The insurance company, in their own interest, have

periodical visits made by a qualified inspector, whose recommendations as to repairs and maintenance must be attended to by the user, who is thus practically relieved from a somewhat irksome responsibility.

For preventing incrustation of boilers the names of specifics are legion. In some cases a very cheap product is labelled with a high-sounding name and palmed off on the ignorant at an unblushingly outrageous profit. Such *apparently* absurd remedies as potatoes are said to be efficacious, and I have even heard of a dead dog being recommended by an intelligent workman as an infallible cure.

The simplest remedy for incrustation is usually found to be the use of a small quantity of caustic soda, or soda ash containing caustic, which precipitates the lime salts held in solution in a form in which they can be easily removed. Tannate of soda may also be cited as a useful remedy.

The dangers of scale formed on the skin of the boiler are too well known to require any explanation. It is now some months since the London *Engineer* on the strength of some safety valve story (a) if such things were never heard of at home,) published a violent diatribe on the prospective dangers due to planters' ignorance of boilers. Although the reflections on the intelligence of the planting community were somewhat uncalled-for, there is no doubt that the question of Boiler Inspection and Insurance might profitably engage the attention of the Planters' Association. A system of mutual insurance might possibly meet the case.

It may not be out of place in this connection to point out the unwisdom of irrational appeals to Government inspection. In a recent number of *Engineering* were some comments on this point, apropos of the explosion of a compressed gas cylinder, of the kind now in very general use for supplying lime-light lecturers, dentists, and so forth.

It is not impossible that a boiler explosion in this country may create a scare and a demand for outside inspection. Which is the safer guide to the steam user, the possibly perfunctory advice of a Government inspector, or the recommendation of the representative of the Insurance Company who take on themselves the responsibility of making good the financial losses of the client who follows their recommendations; but to dwellers in our enlightened colony with the railway and telegraph department before our eyes, it is perhaps less necessary to point out the human limitations of governmental infallibility.

NOTES FROM OUR LONDON LETTER.

LONDON, May 10.

MR. CHRISTY'S VIEWS AS TO THE CAFFEINE MANUFACTURE

absorbing a very material quantity of your tea are to be accepted, the necessity for such new markets may not soon become an imperative one. But then tea of quality sufficient for caffeine making purposes can, I suppose, be grown at low elevation. The present Government reserves, if planted upon, should be capable of producing something particularly fine.

BULKING TEA AT THE BRITISH CUSTOMS.

With respect to the views of Mr. Christy just referred to, I may tell you that the per contra side of the question has been exposed to me this week. Mentioning to a gentleman highly experienced with tea matters Mr. Christy's suggestion that rebulking should be abolished and the Customs' estimates of weight be imposed upon buyers, he remarked that such insistance would be likely to heavily handicap British grown teas in their competition with China teas. On my asking why it would do so, he observed:—"Perhaps you are not aware that China teas never have to be rebulked. You see all of this is collected in small lots and is never dealt with until it is received at the port of shipment. Then the native experts classify it, and it is packed in large breaks, being accurately weighed into the chests. Thus, you see, China shippers score upon two points over Ceylon. They avoid the small breaks that are such a bugbear to our brokers and their teas are never rebulked on arrival in this country. Buyers here therefore willingly accept the Customs' weight declared upon these teas. They would never do so with Ceylon or Indian teas unless these were declared to be factory bulked. Of course the Chinese system has one great drawback. Their teas are never known by estate marks, and the estate branding of Indian and Ceylon teas is much valued as a guide to purchasers. But this is largely compensated for by the extraordinary skill of the Chinese in grouping their teast. It is very rare for a single chest in a break of 200 boxes to vary appreciably in quality from the others, and so buyers may rely upon the flavour of single samples qualifying the whole break. So you see it does not seem to me that Mr. Christy's suggestion could be acted upon so long as any tea comes home from Ceylon that has not been factory bulked. Rebulking here must be continued so long as uncertainty remained as to the degree of care exercised on estates upon packing the chests with accurate weight. Ceylon planters are notoriously sinners about this, and until this reputation has been amended purchasers will not buy teas of their's on the Custom's weight. Rebulking will be insisted upon, and would be, in my opinion, absolutely necessary. No, I could never see any difficulty in the way of tea being accurately weighed into the boxes on the estates, neither can I believe that it would be impossible to avoid the number of small breaks sent home by your planters. Until they mend their ways in both these respects Mr. Christy's recommendation can never have effect, and rebulking, with its attendant evil of loss by spilling must remain the practice."

Mr. John Hughes thinks it might be best for something of the China system to be introduced in Ceylon, the teas being locally purchased by Syndicates and packed in large breaks by it in Colombo. No doubt this would do away with the rebulking nuisance, but then could the advantage of estate marks be retained? Mr. Hughes is probably influenced by his belief that tasting is far more efficient in Ceylon, owing to the softness of the water, than it is in London, and that teas so graded would be more reliable under local classification than they can be under the existing system.

TALGASWELLA.

GENERAL REPORT FOR CIRCULATION AMONGST THE SHAREHOLDERS OF THE COMPANY.

Upon this occasion I was accompanied over the estate by Mr. James Forbes, the Chairman of the Board of Directors, and it being his first visit to Talgaswela, he will no doubt have conveyed to the other Directors the impression he food of the property.

Speaking generally of the appearance of the estate, there is an improvement noticeable in the condition of the bushes in fields Nos. 2, 5, and 6, but the others are much the same as when last reported on, and although the weather at the present time is most favourable for the growth of leaf, the flushes are not, I regret to say, so strong and vigorous as might have been expected at this period of the year, still the returns to date show (as was anticipated) a considerable advance on the yield for 1894, the figures being 40,317 lb. and 29,481 lb. of made tea respectively. The Estimate for the year is 130,000 lb., and though the quantity already secured is somewhat disappointing, it is quite possible that this figure may be reached, or at any rate closely approached; a good deal, however, will necessarily depend on the effects produced by the South-west winds which sometimes are very destructive in this district.

One of the great drawbacks to Talgaswella, as has been frequently mentioned, is the irregularity in the growth and development of the bushes, and were it possible to separate the good from the bad, the former would probably not occupy very much more than half the cultivated area. This is the chief reason why the returns have hitherto been so disappointing, and it moreover constitutes a serious difficulty in carrying out manuring operations, the indiscriminate blending of good and bad being such as to negative the possibility of any general system of abandonment of unprofitable land. While fully realizing the difficulties of dealing with tea which is only partially productive, the directors decided a few months ago to set aside a sum of R3,500 for manuring two of the best fields with castor cake and bones, (in the proportion of two of the former to one of the latter,) and it is hoped that the result of the experiment may be sufficiently encouraging to justify further operations under this head in future years.

In order that the best effects may be produced, the fields set apart for this treatment are Nos. 1 and 4, which have always given the largest returns of leaf and present the best cover of tea. The quantity being applied to each bush is 3 ounces of the above mixture in semi-circular holes on the upper side of the tree.

Forking in the manure is to be tried over a small area but the experiment of turning over the soil a few months ago, in field No. 1, has not proved beneficial.

The acreage already manured is about 70, costing R22 per acre, and the intention is to continue operations until the R3,500 set aside for the purpose has been expended,

The quantity of manure per tree is very small, but I understand that satisfactory returns have followed similar doses in the Udagama district. Besides the artificial manuring, about 12 *acres* of the tea in No. 1 field have been gone over with the contents of the cattle shed.

General Condition of the Property as regards Field Works.—The estate, taking it as a whole, is cleaner than it was on the occasion of my last visit, but the system of regular monthly weeding is not, I am afraid, carried out so systematically as could be wished. To clean an estate, and to keep it clean, it is absolutely necessary that the ground should be gone over every month and the weeds should be buried or otherwise destroyed.

Pruning and Plucking.—Neither of these works are quite so well done as on estates where Tamil coolies are exclusively employed, but bearing in mind the material Mr. Broadhurst has to deal with, the general condition of the bushes is fairly satisfactory.

Roads and Drains.—The outlet road is in a very rough state just at the present time, but the roads on the estate are in pretty good order and the drains have lately been cleaned out.

Factory and Machinery.—Everything under this head is satisfactory and in good working order, but a new sifter will probably be required next year.

Other Buildings.—An Assistant Superintendent having been appointed, some repairs to the small Bungalow will be required and the lines will want looking to from time to time.

Labour.—There appears to be a good supply of Sinhalese labour available just at the present time, but of Tamil coolies there are only about 10 left.

Expenditure.—The estimate for the year, including Colombo Charges and Directors' fees, amounts to R40,877, of which R16,058 has been spent to end of April.

This estimate does not provide for the cost of manuring, and it having been decided to appoint an Assistant Superintendent, there will be some increase under head of salaries, though not very much, as it has also been arranged to substitute a native teamaker for the European who is now in charge of the Factory, and this will result in some saving of wages.

The estimate provides liberally enough for all necessary works, and if Mr. Broadhurst adheres to it, and maintains a good quality of tea, there is reason to hope that the result of the season's operations may not be altogether unsatisfactory, but a great deal will of course depend upon the market, and as regards the crop we are assuming that the season is a fairly favourable one for flushing.

Further Remarks.—In taking up the visiting of Talgaswella last year, it was on the understanding that I might not be able to continue it, and I shall be glad now if the Directors will make other arrangements for carrying on the work. Seeing, however, that henceforth until the close of the year, there will be very little doing but plucking, weeding and pruning, I should hardly think another visit will be necessary for some time to come.

Edwd. S. Grigson.

May 10th.

A SCOTTISH COUNTY COUNCILLOR AT THE TEA SALES.

Mr. Henry Robertson of Edengrove Fifeshire, senior partner of the firm bearing his name, which carries on an extensive produce business in Dundee is a passenger by the "Liguria." For fully six months Mr. Robertson has been touring in Australia and New Zealand. Today he paid a passing visit to Colombo and in the course of his walk round the town attended the tea sales at the Chamber of Commerce Rooms. Mr. Robertson is a member of Fifeshire County Council, a staunch Liberal, and for many years has been connected with public life in that part of Scotland in which he resides.

MR SHOLTO SKRINE AND COOLY LABOUR SUPPLY AND MANAGEMENT.

We are gratified to learn from Mr. Skrine —who has had 24 years' experience as a planter—that he agrees with nearly everything that has been written editorially in the *Observer* in respect of the Labour Supply question. He does not believe in their being any special deficiency, taking the country as a whole; but he is emphatic in supporting our view that if there be a short supply now or for the future, no practical remedy is worthy of comparison with that of *through Railway Communication* between Ceylon and the Cooly Districts of Southern India. The enormous saving in the time now lost along the North road, or waiting at or near ports, and the saving of money and extortions to the coolies—alone should tell heavily in favour of the Railway. That a Indo-Ceylon railway should make it easy for the coolies to return is a decided advantage: for often at present, they become dissatisfied in facing the difficulties attending their return, while if they were able to go promptly when they had made a little money, all the more readily should they come back again to Ceylon.

As regards recent local troubles, Mr. Skrine cannot help thinking that a great deal is due

to mismanagement, and to the want of interest taken in their coolies by some of the younger generation of planters. Like so many of his compeers, Mr. Skrine has kanganies who have been with him since he began felling in Dikoya, while the rate of advances on his force of coolies is ridiculously low. Much mischief is done, in his opinion, through inexperienced men trying to save expenditure after a foolish, shortsighted way—by cutting down the weeding contract, or rate for pruning or other work—rendering coolies dissatisfied and perhaps getting bad work done. He has tried, on the other hand, to be liberal in such matters while insisting on good work, and he has thus always had enough of coolies and a reserve from weeders to put on plucking when an urgent "flush" was in hand. All these and other hints ought to be carefully considered by young planters; but let not the grand and only effective remedy for a deficient cooly supply be ignored, namely the completion of the INDO-CEYLON RAILWAY.

We trust Mr. Skrine will have a pleasant time at home, and while in London that he will put in a strong word with absentee proprietors and agents about the importance of Railway communication between India and Ceylon.

FOR FUNGI, BUGS (SCALE INSECTS), &c.

[I have taken the enclosed from a "Report of Work of the Agricultural Experimental Station of the University of California," just received. It ought to be useful to planters and to embody in your *Tropical Agriculturist.* —*Cor.*]

For Powdery Mildews use sulphur, dusting it on plants.

For Fungi in general use Bordeaux mixture, made as follows: For every 10 gallons take 1 pound of lime and 1 pound of bluestone. Dissolve these separately in hot water and mix when cool adding the rest of the water. Spray on the plants. Or spray with ammoniacal copper carbonate solution, made as follows:—Dissolve 1 ounce of copper carbonate in 6 ounces of ammonia and add 10 gallons of water.

For Fungi and Scale Insects use lime, salt, and sulphur mixture, a winter wash composed of lime 8 pounds, salt 3 pounds, and sulphur 4 pounds, for each 12 gallons of water. Mix one-fourth of the water, one-fourth of the lime, and all the sulphur, and boil for one and a half hour; put the salt with the rest of the lime and slake with hot water; add to the above and boil half an hour longer: add the remainder of the water and apply as a spray.

For Scale Insects use resin soap, as follows:—For 100 gallons for summer use take resin 18 pounds, caustic soda (98 per cent) 3½ pounds, and fish oil 2½ pints: for winter use, resin 30 pounds, caustic soda 6¼ pounds, and fish oil 4½ pints. The material is put in a kettle and covered with 4 or 5 inches of water. The lid is put on and the mixture boiled two hours or more, and then the rest of the water is added, a little at a time. Spray on the plants. Or use the gas treatment: Cover the plant with an oiled tent, and for each 100 cubic feet of contents place in a bowl beneath the tent ⅔ ounce of water, ⅓ ounce of sulphuric acid, (oil of vitriol), and ⅓ ounce of potassium cyanide (98 per cent), being careful not to inhale the poisonous gas nor to allow it to escape from the tent for half an hour. The leaves may be injured if used during the middle of the day.

For insects in general use kerosine emulsion, as follows: Make a soap-solution of half a pound of soap to a gallon of water. Heat it to boiling and add two gallons of kerosine. Pump it through the spray pump, with good pressure, for five to ten minutes. For use add ten times as much water as you have of emulsion. Apply as a spray. Sour milk may be used instead of the soap solution. The emulsion is made more effective by the addition of a very small amount of arsenic to the soap solution, or of "buhach" to the kerosine.

For Fruit or Leaf-eating insects, use Paris green or London purple as a powder at the rate of 1 to 5 pounds to the acre distributed by walking or riding over the field, carrying a pole, at both ends of which are hung muslin bags containing the poison. As a spray use 1 pound to 200 gallons of water. In spraying these arsenites the nozzle should be held at some distance from the plant and no more should be applied after the leaves begin to drip. Do not use these on crops where the poison would be injurious to health.

PRODUCE IN AMSTERDAM.

Consul Wm. Robinson, in his Report to the Earl of Kimberley on the trade of Amsterdam in 1894, states:—

Any hopes of a revival in trade and commerce which may have been entertained at the close of the year 1893 were doomed to severe disappointment.

COFFEE.—The total importation of coffee into Holland in 1894 was 121,000,000 lb. Java sent about 85,000 bags more than in 1893. Macassar and Sumatra sent but small supplies. Prices of good ordinary Java ruled very steadily throughout the year. Prospects for 1895 are not unfavourable as respects the size of the Java crop, although this will not be so large as the present one.

TEA.—The demand for tea was very slack in the first months of 1894, with gradually declining prices, which reached their lowest point in July and August; towards the close of the year there was a better demand, and advanced rates were obtainable. The market closed very firm. The sales in 1894 showed a not inconsiderable increase over 1893, the greater proportion being, as usual, Java tea. British India, not blended, does not meet the Dutch taste, but some English mixers of cheap blended teas have succeeded in finding a market here for their produce.

COCOA.—The importation of Java cocoa in 1894 was about 50 per cent. larger than in 1893. The finest descriptions sold in February, 1894, at 8½d to 9d per lb., but in consequence of the absence of demand, the price fell to about 7d per lb. at the close of the year, having touched 6½d in October.—*L. and C. Express*, May 10.

TEA IN CALCUTTA.

THE FIRST SALE OF THE SEASON.

The opening tea sale of the present season in Calcutta was held on Thursday last. According to the local correspondent of the *Pioneer*, an unusual amount of interest attached to it, owing mainly to the great advance in tea shares that has recently been seen. It is not explained how, exactly, this was supposed likely to affect the sale, but we may presume that some people considered that a rise in tea shares indicated a coming rise in the tea market! Any such gentlemen can hardly look back with unmixed pleasure the actual results of the sale, for, now that this is over, opinions differ as to whether it was satisfactory or the reverse. The correspondent already referred to says that, compared with the opening sale of last season, medium class teas were lower, but in descriptions valued not higher than 7½ annas, and on the other hand in the finest descriptions, prices were fully maintained. The tea-brokers are of opinion that on the whole the sale

went well, but agents of tea gardens seem a bit dissatisfied. The correspondent himself thinks that bearing in mind that about 60 per cent of the crop is of the class that sells at 7½ annas and under, it should be taken as satisfactory that there was a fairish demand for such. There is another point of view, however and seen in this the apparent firmness of demand, for inferior qualities, and slackness of inquiry for medium sorts, is not altogether satisfactory. There is some risk of Indian tea-planters attending too much to quantity and too little to quality. Any such policy would be short-sighted, and would certainly bring about a destruction of the trade, if the Chinese were to bestir themselves and compete more actively than they have lately done. No doubt, a larger quantity of low class tea must be grown, because there is a market for it, and because many buyers cannot afford to pay more than a certain price. But speaking generally, the taste of the great consuming public in the United Kingdom is likely to improve rather than to deteriorate, and India's hopes lie in an improvement of quality rather than in a simultaneous reduction of both quality and price.—*Madras Times*, May 24.

INDIAN PATENTS.

CALCUTTA, May 9th.

Applications in respect of the undermentioned inventions have been filed, during the week ending 4th May 1895, under the provisions of Act V. of 1888.

William Bull, Civil Engineer, of Calcutta, for improvements in burning bricks and tiles.—*Indian & Eastern Engineer*.

SERDANG—SUMATRA; No. V.

(By an ex-Ceylon Planter.)

LIVE AND LEARN.

My silence since my last has been longer than I intended; but I was called to the other end of the "Oost Keast"; and what with travelling, prospecting, and writing reports, time has gone ahead, and left me a bad second. So now I must endeavour to catch time by the fetlock, his forelock being beyond my reach.

I read lately that most of the aphorisms which are always on our lips are trash; and misleading at that. One, however, surely stands good: "Live and learn." I remember when I was a youngster at dinner one evening a fellow S.D. asked the chief 'how long it took to learn coffee planting thoroughly?' The reply with a genial laugh was: "Well, my boy, I've been planting coffee for a quarter of a century, and I learn something new every day!" The youngster was ferried across by Charon 15 years ago; and the P.D. is now a well known cross-country man with fox-hounds in the Midlands.

We all remember in planting a new clearing, how it was always dinned into our ears, "Be careful, and don't turn the tap-root." A few days ago I met a man who, I am told, puts turned tap-roots to good account. However, I am due to visit him shortly; and will try and get hold of his *modus operandi* and describe it to you. But in any case he must surely be a genius! Another maxim always drilled into us in the pruning season was "Never touch a primary," though if I remember rightly, Mr. W. Sabonadiere in his monograph on coffee-planting adds "until necessary." But even then, (I speak from memory,) his restrictions are rather severe. A few miles from here is an estate where on the four-year-old coffee, every primary is tipped! And this is the thusness of it. The planter, working for his own experience, noticed that his trees threw out no secondary branches. "I'll *force* them to," said he. And he tipped every primary. He knew not at the time that the reason his bushes were unable to make wood was that the enormous crop upon them took up all their strength. Strangely enough, his experiment was a success; and now he has a fine supply of wood for next, year, as well as his present crop. The wood, of course, is largely in the shape of gormandizers; but these are always crop-bearers; and if it is attempted to cultivate Liberian coffee into the symmetrical shape of the friend of our youth, Arabica, disaster will ensue both to the bush and the bank-book.

I am a firm believer in the force of heredity, and we must not forget that Liberian coffee is only a very few generations from forest trees. So it would be absurd to attempt to train it *à la Arabica*. Every bush must have individual treatment; and men who know the plant ken full well how marked is the individuality of each bush. In this cultivation a pruning knife is a planter's worst enemy. (The experiment mentioned above, I do not include as cultivation. It was a bow drawn at a venture; and luckily hit the mark.) At the same time an enormous amount of good can be done by judicious handling. I remember a saying attributed to old Dr. Thwaites of Peradeniya, viz.: that in pruning, we planters without a moment's thought would rip off valuable wood which it would take the Almighty and the bush a long time to put on again. One of the best known planters in the Native States once told me that in Liberian coffee he would leave everything to nature. This, I think, is going too far. Nature, animal or vegetable, must, to a certain extent, have it's way; and among the minor crowds Liberian coffee is one that must be humoured; but cannot be forced.

Interesting figures next letter.

THE INDIAN GOVERNMENT AND THE SALE OF QUININE.

Regarding the sale of quinine in pice packets, the *Calcutta Gazette* says:—Reviewing the operations as a whole, and having regard to the novelty of selling quinine by the dose, and the various difficulties of detail which had to be overcome at starting, the Lieut.-Governor considers that the scheme has been quite as successful as could reasonably have been expected. An effective demand for cheap quinine among the masses of the people has been called into existence; the demand is shown to vary from month to month in general accordance with the conditions tending to produce fever; and there seem to be grounds for hoping that it will continue to increase if stimulated by judicious administration. Under the scheme as now modified the post-offices all over Bengal will continue to be the main agency for distributing quinine. The Lieut.-Governor trusts that District Officers and the higher sanitary officials will lose no opportunity of helping to promote sales and of spreading information as to the wishes of Government in the matter. In the Darjeeling district (in parts of which the mortality from fever is extremely high) quinine is now sold, or shortly will be sold, at no less than 19 rural centres in addition to places where there are post-offices. The vendors are for the most part respectable shop-keepers They are supplied with parcels containing 102 packets of quinine, on the same terms as postal officials to remit the price to Government, less commission of six packets per parcel All Magistrates of districts are authorised to indent on the Superintendent of Jail Manufactures for the necessary supplies of quinine; and they should arrange to remit the sale proceeds to that officer.

COFFEE *Vs.* WHISKY-TODDY.

"Coffee and how to get it good" is the title of an article in *Science Siftings* of date April 27th. The different varieties are described and in dealing with coffee as a stimulant, in cases of accident, its use is recommended in place of the usual over-stiff whisky-toddy, not only for medical reasons, but because it renders the patient liable to the charge later, from those not familiar with the facts, of his having been injured on account of drunkenness.

COLOMBO TEA SALES:
A VISITOR'S IMPRESSIONS.

"Surely I have come to the wrong place?" was my mental remark when I stood on the threshold of the Chamber of Commerce Rooms, to which I had been directed as the venue of the great Ceylon tea sales. But for the positive assertion of the brass-plate which faces the street I should have retraced my steps and sought for the tea mart elsewhere, so different was everything from my preconceived ideas. With tea sales one naturally associates the presence of tea. There was not an ounce of it about! Seated in free and easy fashion at tables were some twenty or thirty gentlemanly-looking men, whose *dishabile* of white duck, deliciously cool to look at, with the accompaniment of the inevitable cheroot, appeared strange to the Britannic eye, to which, business and a black coat with "tile" hat are inseparably connected. The restful pose and the air of inactivity are, however, only superficial, and a close observer can see in the tea buyers all that 'cuteness and mental alertness which Cousin Jonathan is credited with possessing in larger measure than his neighbours. For my own part I should say that if Jonathan did come to Ceylon he would not have a walk over! The gentleman—I use the term advisedly and not in the general sense so often employed—who at the moment conducted the sale, for the brokers have their turns, spoke in low incisive tones in pleasing contrast to the oratorical flourishes often to be heard under similar circumstances. The broker was there to sell, and the buyers to buy and the lots were disposed of in marvellous quick time. I should not forget the native buyers who were present. They took a back seat, only at long intervals, bidding, with oriental stoicism and, to outward appearance, taking no interest in what was going on.

For fully an hour I sat listening to what, to me, was quite unintelligible—the sale of Pekoe, Pekoe Souchong, dust, fannings, &c., under brands the name of which is legion. And as I prepared to leave I reflected these are the men who buy and sell the tea, which will find its way into the billy-can of the Australian squatter, the pannikin of the Canadian voyageur, into the windows of the palatial establishments of the great British cities, into the highland sheiling, to lie alongside butter, paraffin oil and matches, and to American tables, I hope in greater quantity than in the past, because in this matter Jonathan, I understand, has shown the lamentably bad taste to prefer Japan's and China's to Ceylon tea.

TROUT FISHING IN THE HORTON PLAINS

We do not think the introduction of trout into the stream passing through the Nuwara Eliya plains, or that in the Barrack plains can be spoken of as yet as a great success. Nor can the term be applied to any of the streams in the neighbourhood at about the same level, or away on the Elk Plains or Bopatalawa. But, certainly, repeated experience seems to shew that in the Horton Plains river and Billuloya, the trout are prospering to the heart's content of the most ardent sporting fisherman amongst us. On the Horton Plains in fact, the experiment can be pronounced an unqualified success. And it is not difficult to explain why this should be the case. It is not simply that the additional elevation of 1,000 feet above sea-level constitutes an advantage with the cooler temperature of the water, over that prevailing in the lower and warmer Nuwara Eliya region. Far more important, however, is the exemption of the Horton Plains' stream from sudden and disturbing floods. The watershed on the side of Totapella or the neighbouring mountains above Horton Plains is, comparatively, of limited extent, and consequently such floods are never seen in the streams there as may occasionally be witnessed in the Nannoya, the Seeta Ella or the Buluhal Ella. Then again there is the freedom from bazaar debris which is a drawback in Nuwara Eliya. We are not surprised therefore to learn of the Horton Plains stream being comparatively full of trout and of good size affording excellent sport.

Our latest report has come from Capt. Bayley who, on a recent visit, much enjoyed fishing in the stream, capturing of a morning with the rod, a couple of extremely nice fish from 1 to 1½ lb. each. His son, lower down in the Bilhooloya obtained one of no less than 4 lb. and this proved later on, though not observed at the time, to be full of spawn—an evidence of how thoroughly the trout are becoming acclimatised. Capt. Bayley states that more delicious eating than the fish he captured, could not be desired; but he considers it very necessary there should be some check on indiscriminate fishing and even on natives and othres using nets, in the higher streams. It seems that while a Local Board rule exists that no one can fish in Nuwara Eliya without a license costing R30 per annum—the money being devoted to the Trout Fund—no such regulation can legally apply beyond the Board's limits and consequently any one is at liberty at present to the go and fish on Horton Plains. So far as all ntelligerst penions, and especially Europeans are concerned, we trust a sense of honour will prevent their going to fish there or in any other stream in which trout have been placed, *unless* they have previously given substantial support to the Trout Fund by taking out a license or by paying a special subscription. It should not be difficult through the resthouse-keeper to learn the names of all who visit Horton Plains with rod or net, and we should be glad to publish the same if it will help the purposes of the Trout Fund. It may have been observed from the report of our Nuwara Eliya correspondent, published the other day, that the last batch of trout ova imported was not very successful, and that 30,000 more ova have been ordered. This means continued expenditure and the necessity for liberal support: and certainly all who are able to enjoy the sport of the resulting trout fishing, whether on the Horton Plains or elsewhere, ought to be foremost in extending their support. If all interested come forward as they should, the continued success of the trout-breeding experiment must be assured; and perseverance in supplying the streams with fresh stock should secure a very satisfactory measure of success in the lower streams, although the trout may never be so lively and numerous, or the sport so good as in the higher Horton Plains' river.

TEA SEED IN DEMAND.—A seller of well-known local tea seed reports:—

"The demand for tea seed is as keen as ever. We are full up of orders for the next four months. We have just completed twenty maunds Singlo for Java! The proposal that the Planters' Association should buy and hold land is splendid. I wonder if they would care to buy up tea-seed bearers."

TEA-GROWING ON THE CAUCASUS.

THE RUSSIAN COMMISSIONER IN CEYLON.

The Manager of Abbotsford plantation, writes:—
I have had a very pleasant visit from the Russian Commissioner who seems to be a most suitable man as Chief of such an Embassy.

He is I should say a very good all-round man, and specially strong in Botany and Agriculture. As far as I can see, the main object of his tour is to ascertain what tropical and subtropical plants are suited for cultivation in the Caucasus, and he pays particular attention to everything connected with tea, but I do not think Ceylon need fear competition from that quarter, as from experiments being carried on at present the cost of production would be from 5 to 10 times what it is here.

The soil it seems is good though the features of the country are as a rule very steep or even precipitous and though the climate is suited to the growth of tea, I gather that they suffer from severe wind storms from the fact that grevilleas cannot stand their gales.

I hope Mr. Klingen will have a very pleasant time of it in Ceylon and that he will take a big shipment of our teas along with him on his return to Russia.

He paid the Colony a splendid compliment when I gave him a cup of it here. "This is excellent tea it is like China." [He meant the very *best* China, doubtless!—ED. *T.A.*]

NORTH BORNEO ESTATE NOTES.

BYTE.—More and more coffee in bearing, and plants growing well, topping a few as high as 9 feet. Coconuts growing remarkably well. Put in 80,000 coffee beelits.

KABELI.—Some nice flushes have set. Coconuts growing well, some of them will want little further weeding except from cattle of which a few have been turned in amongst them. Felling by the Development Corporation for the Trading and Planting Co. in the Boad Creagh district for coffee is in progress. Loong Piasow Coffee. a few ripe berries showing heavy rains make the weeding expensive. Coconuts coming up nicely.—*British North Borneo Herald.*

THE AMSTERDAM CINCHONA-AUCTIONS.

May 9th.

Our Amsterdam correspondent telegraphing on Thursday evening, states that at today's auctions of Java cinchona-bark in Amsterdam only 3,953 packages out of the 6,178 offered were sold, the remainder being mostly very firmly held. The tone at the auctions was rather more quiet than had been expected, and during the sale a slight decline occurred. The unit, nevertheless, averaged 2·92c per half-kilo, which was about 0·08c below the rates paid privately and 0·07c above the average unit of the last April auctions. The following equivalents of sulphate of quinine were bought by the manufacturers:—Philadelphia and Paris 2,212 kilos; Brunswick 4,941 kilos, Mannheim and Amsterdam 1,557 kilos; Frankfort-on-Main 3,879 kilos; Auerbach 2,081 kilos. Druggists and others bought 2,724 kilos. The total quantity of quinine offered was 26,705 kilos; that sold 17,394 kilos. The prices paid for manufacturing bark ranged from 6c to 53¾c (equal to 1d to 9½d per lb); for druggists' bark, from 7½c to 67c (equal to 1¼d to 1s per lb).—*Chemist and Druggist.*

JAVANESE LABOUR IN BORNEO.

At the latter end of last month I visited the Tobacco Estates of The New Darvel Bay (Borneo) Tobacco Plantations Limited to enquire into the condition of Javanese labour on these plantations. I visited Lahad Datu, Lamine and Segama plantations. I found very little sickness existing amongst this race of people and their average of sickness compares very favourably with the Chinese coolie. They are well housed and contented looking, the number suffering from fever were in a very small proportion to the whole, and this was the principle form of illness affecting these people. This is all the more satisfactory considering that they are employed in building, jungle cutting, and making roads and drains, &c., which latter is not the healthiest form of occupation generally speaking. Working on this Estate at the present time the numbers are, Javanese 243 men 32 women Banjerese 106 men 9 women, and the average number of both races employed during 1893 and 1894 was 130 and 270 respectively. The total death rate during the same years 1893 and 1894 was for the former 1·7 per cent and for the latter 0·8 per cent.—GEO. W. JOHNSTONE, Acting Principal Medical Officer.—Medical Department, Sandakan, March 15th 1895.—*Brit. North Borneo Herald.*

A CEYLON TEA TRUST.

We read in *Truth* of May 9th:—It is announced that the documents for the transfer of the Ringarooma Tin Mines to the Company have arrived in London, and the subsidiary Company which is to work the property is in course of formation. The Directors have also acquired the Oolapane Tea estate as a going concern, for working which the Ceylon Tea Trust, Limited, will be formed almost immediatel .

SEYCHELLES.

The auction sales of the damaged goods landed from the Messageries Maritimes ss. "Australien" have already realized Rs 63,000. Every shop in the place is crowded with "all sorts and conditions" of cotton goods etc. Never within the memory of "the oldest inhabitant" have the Seychellois been dressed in such gala array-silks and furbelows galore! There will be no necessity for importing any cotton goods for the next two years. Prospects of a vanilla crop very poor. Liberia coffee up. It is estimated that more than one million plants have been put into the ground during the last three years. Mr. J. Risely Griffith has left for St. Kitts. Everyone looking forward with pleasurable anticipation to the arrival of Mr. Cockburn Stewart. He will not be on a "bed of roses" at the commencement of his regime; for the Exchequer is on the verge of bankruptcy; but he will be "the right man in the right place" and will pull through if any one can.—*Merchants and Planters' Gazette.*

CEYLON AND ORIENTAL ESTATES.

To the Editor of the *Financial Times.*

SIR,—Being a shareholder in the Ceylon and Oriental Estates Company, Limited, I have received a copy of the report of its directors for last year, and considering the way the undertaking is handicapped by heavy payments for interest and commission on the capital borrowed to float it (the public having been very chary in applying for shares), and the high cost of the London management, I suppose I may congratulate myself on getting an additional 2 per cent dividend for the year, though 5 per cent. is, I think, no great thing out of a gross profit of 50 per cent. and compares badly with the dividends of other Ceylon Companies. The repayments for debentures and commission on their issue absorb about 50 per cent. of the gross profits, and the cost of London managements about 15 per cent. more the latter being double the average of any other Ceylon Estates Company. Hitherto the directors have very generously surrendered their fees, but naturally with the improved results of the year's working they consider themselves entitled to remuneration, which last year amounted to £700. If multiplicity of counsellors ensures good management, this Company is admirably managed, for there are seven directors, five of whom are ornamental, as I do not suppose they know anything about tea planting.

The directors congratulate themselves upon the yield of their estates during an unfavourable season

being only 4 per cent. below the estimates, but they neither say what these estimates were, nor what the average yield was, as is the general practice.

The shareholders would probably learn, if they did give this information, that the average was the smallest of any Ceylon Company. It is, doubtless, a comfort for the shareholders to learn that the managing director, having paid his periodical visit to Ceylon at their expense, is well pleased with the way their representatives there have managed and developed their estates.

Having an experienced visiting agent in the island, I am puzzled to know what advantage the company gains by the expenditure of £184. The manager could well afford to pay his own expenses out of the very handsome salary he receives for managing the company. He resides chiefly in Somersetshire; the duties he performs for this salary are therefore nominal, and his office a sinecure.

The directors inform us that they have purchased the Ooragalla Estate, of some 470 acres, but do not condescend to inform their shareholders how and what they paid for it. If the ornamental directors are good for nothing else, they are quite able to draw out a straightforward report, which I do not consider theirs to be.—I am, &c., PEKOE.

MAURITIUS.

SUGAR—THE WEATHER AND THE CROP.

Port Louis, May 7th.

The weather continues to be favourable for plantations and the vegetation is very luxuriant all over the island.

VANILLA.—The market is firm and bare of good quality. An important lot of 488 kilos, quality was sold this week at R32 per kilo, 285 kilos at R26 to 28 perd kilo. As we mentioned in our last the outturn of the crop will not exceed 4,000 kilos.

We quote nominally:—

	R.		R.		
1s quality	32	to	33	per kilo	above 6 inch.
2nd do.	28	to	29	,,	
Good to middling	25	to	26	,,	
Vanilloes	14	to	18	,,	

ALOE FIBRES.—The market is firm. We have to quote the sale of a few bales good quality at R240.—*Merchants and Planter's Gazette.*

CINNAMON: QUARTERLY SALES IN LONDON.

The second quarterly auctions took place in London on Monday, when 1,200 bales were offered and the whole sold. There was good competition with an advance of ½d to 1d per lb. in prices compared with the previous quarterly sales.—*Examiner.*

GRAPHITES.

At a recent meeting of the Geological Society of Glasgow, Mr. John Smith exhibited a series of specimens of graphite as follows: Graphite from Ceylon where it occurs in a very pure form in metamorphic strata being probably the result of alteration of a coal seam through heat. It is a brilliant variety being built up of thin scaley crystal such as are found in blast furnaces which are making No. 1 pig iron. Graphite from Travancore. This seems much the same as the former specimen only more compact, the component crystals being smaller., Graphite from a blast furnaces known as "Kush." This variety comes from the furnaces, both with the slag, the black dirt, and the iron. When the latter is very "rich" numerous scales of graphite are squeezed out to the surface of the "pigs" on cooling, and which after show in consequence quantities of corroded-looking little holes. Many of these graphite scales are so thin as to float in the air when they become detached. The brilliancy of their surface does not seem to be affected by time, as some exhibited were not tarnished in the least. Mr. Smith also exhibited a sword-shaped piece of clayband ironstone from Waterland, Ayrshire. It measured 19 in. by 1⅝ in., with very sharp edges and its peculiar shape has resulted from the meeting of two "joints" in the rock, which are curved in three directions.—*Indian & Eastern Engineer.*

PLANTING IN NORTH BORNEO.

The River Klias is on the West Coast of North Borneo and was, presumably, the former mouth of the Padas River. A number of Chinese have settled on the Klias but the majority of the population are of Brunei extraction and are a tall, well-made, good-looking lot of people. The soil is suitable for any tropical cultivation and this district in former times exported a large quantity of pepper which was grown on the high lands near Bundu. The great amount of moisture in the air should enable the Klias distrct to grow a cotton similar to the sea Island cotton. Of towns the chief is Menumbok which is the most convenient place for receiving sago but the water supply is not good, the result being that the sago of Padas is worth 40 cents a picul less than the Sarawak sago. As many thousand piculs are exported yearly from Menumbok it would probably pay the Mill owners to make a water supply cistern at the hills to the West and North West of Menumbok, the cost of which would be paid for by the higher price which the better washed sago would command. Mempakol is a small village on the point opposite to Labuan and is the chief custom station of the district and is the residence of the Magistrate, Mr. J. G. G. Wheatley. Being open to the sea it has a pleasant breeze, at times very strong, and being connected with Menumbok by a telephone and bridle road and with Labuan by the telegraph cable it will probably continue to be the chief judicial village in Province Dent but its want of water will be detrimental to its progress. The sago factories formerly at Mempakol have been removed to Menumbok and the latter appears to be a rising station. From Mempakol to Menumbok the distance is about two miles which is planted, nearly all the way, with coconuts which thrive well. These plantings were begun at the instance of Mr. Joseph Wheatley who in several cases gave the seed, bought at his own expense, and the plantings have latterly been so numerous that the Padas district probably contains the largest quantity of coconuts of any district in North Borneo. The exports of sago from Benoni, Bangawan, Qualla Lama, &c. must be considerable but the navigation at times to Labuan is stopped by the weather. At present all the sago from those ports goes to Labuan.—*British North Borneo Herald.*

RICE AVERAGES FOR MAY.

Delivered at Colombo Railway Station free, bags extra.

Soolya 1st quality	..	R2·80 to 2·91	per bushel.
Do 2nd	..	R2·62 to 2·75	do
Cuttack	..	R2·62 to 2·75	do
Callunda (Calcutta)	..	R2·75 to 2·90	do
Do Coast	..	R2·80 to 2·94	do
Kara do	..	R2·62 to 2·75	do
Do Calcutta	..	R2·40 to 2·60	do
Kazla do	..	R2·25 to 2·40	do
Muttusamba	..	R3·25 to 3·37	do

CINNAMON PEELERS AND THE LAW OF CONTRACTS.

A correspondent writes:—"I have seen the letter in your paper of the 27th. There may be conflicting opinions among lawyers and laymen about a second conviction for desertion, but the decision of the Collective Court in a Ratnapura case reported in Supreme Court Circular vol. iv. pp. 2–6 clearly lays down the law on the point and a Magistrate is bound to follow the ruling of the S. C. Ask the lawyer, who gave it as his opinion that the Magistrate was right to refuse to send a defaulter to jail twice for the same offence, whether he has read the judgment of the Appellate Court above referred to. Planters must try to get men, after being in jail, punished a second

time. Not for the *identical* offence for which they had been previously punished, but for a *fresh* breach of the same contract. Why should not a servant, who contracts to work for a period of 3 years, be prosecuted and punished on each and every occasion he makes a breach of the contract? How otherwise is it possible to enforce the contract? If the contract is determinable by the misconduct of the servant then a contract for a specified term of service is a farce. If a man can be punished more than once for, say, theft, why not for a statutory offence such as desertion. Both Mr. Jardine and Mr. Nicholas have secured a second conviction in cases of repeated desertion."

[We are in receipt today of a long and interesting letter from the most experienced ex-Cinnamon planter in the country, which will appear in our Monday's issue.—ED. *T. A.*]

DRUG REPORT.

(From *Chemist and Druggist*)

London, May 9th.

CAFFEINE seems to be rather less firmly held. It is true that the manufactures are unwilling to mention any time for delivery, although ther nominal quotation remains 15s to 16s per lb; but we have it on good authority that one brand at any rate may be had from second-hand holders for delivery in about six weeks at 21s per lb; on the spot there is practically nothing obtainable.

CARDAMOMS—A fair demand was shown at the continuation of the auctions on Friday, and of 51 cases offered on that occasion 43 found buyers, but there was no change in the quotations; fair bold yellow Tellicherry cardamoms sold at 1s 9d per lb

COCAINE—A somewhat weak market; there has been no alteration in the official quotations, but it would not be surprising to see a further drop soon, there being now several holders of crude cocaine, some of whom are rather anxious to sell.

COCOA BUTTER—At the public auctions held in Amsterdam on May 7th, 70,000 kilos of Van Houten's brand sold at from 66 to 67¾ cents an average of 66 85 cents per half-kilo; the tone was very animated; at auction on London May 7th, 500 2-cwt cases of Cadbury's brand sold at 12¾d to 12½d per lb, making a decline of from ½d to ¾d per lb

ESSENTIAL OIL.—Sales of 15 tons Citronella oil in drums have recently been made at 13¼d per lb, c i f for near-at-hand; and 12½d per lb, c i f for shipment until the end of August; on the spot 1s 2½d to 1s 3d is asked for tins.

QUININE—At Friday's drug auctions 5,000 oz Auerbach quinine were to have been offered, but this parcel was said to have been sold privately before the sales; there has been no business in the Mincing Lane market this week, and there are sellers of German bulk at 1s per oz.

VANILLA—There was a fair supply of good quality at the last auctions It realised full prices, medium grades being again dearer Fine 6 to 8½ inches brought 21s 6d to 24s; 5½ to 7½ inches, 16s 6d to 18s; dark and chocolate, slightly crystallised, 3½ to 5½ inches, 16s to 18s 6d; ordinary dry down to common foxy, from 15s 8d down to 3s 3d per lb.

CEYLON PRODUCE IN LONDON.

CARDAMOMS.—Of the total of nearly 400 cases offered in auction last week about 320 cases found buyers at previous rates to a decline of 1d per lb., as follows:—Mysore kind from Ceylon, fine bold plump pale at 3s 3d, rather smaller at 3s 1d to 3s 2d, boldish pale brihgt at 2s 9d, medium size ditto at 2s 4d to 2s 5d, medium bold lean part yellowish at 2s 1d to 2s 2d, smaller at 1s 9d to 1s 10d, small brownish at 1s 7d to 1s 8d, and pickings at 1s 4d to 1s 5d per lb. Malabar kind from Ceylon, boldish pale bright at 1s 10d, medium ditto at 1s 7d to 1s 8d, medium size dull at 1s 5d, small brown at 1s 2d to 1s 4d per lb. Seeds realised 1s 9d to 1s 11d, bold 2s 1d per lb.

CINCHONA BARK.—The market is quiet, and only a few small transactions have taken place privately.

At the Amsterdam auctions yesterday 6,100 packages Java barks were offered, and met with a good demand, about 4,000 packages being sold at an average unit of 2·92 cents., against 2.87 cents. at the last series; private sales have however been made in the interval at 3 cents.

The following are the Board of Trade Returns for the first four months of this and the last three years:—

	1895. Cwt.	1894. Cwt.	1893. Cwt.	1892. Cwt.
Imported in four months ..	17,042	22,485	38,410	38,449
Exported in four months ..	13,367	19,753	31,372	42,192

SULPHATE OF QUININE.—The market has become quiet, and business is Limited. Sellers of second-hand German ask 1s, and there are buyers at 11⅞d per oz.—*Wilson, Smithett & Co.'s Report*, May 10th.

PLANTING NOTES FROM DIKOYA AND MASKELIYA.

There have been some nice showers in these districts which have made everything look much brighter and fresher; but they seem to have little or nothing of the wild earnestness of the monsoon about them, and are of a quiet, easy-going decorous character, and clear off in a most unexpected manner just when one's mind is made up, that after all appearances notwithstanding, the rain *must* be the big'un, taking a preliminary canter. Doubtless, however, that coming events cast their shadows before and that we shall have more than enough of wet weather shortly,

COCONUT FIBRE IN AMERICA,

THE ONLY FACTORY IN THE UNITED STATES,

The fibre factory of the Mobile and Honduras Manufacturing Company is in full blast. The establishment is located in the three-story, treple-front building on the west side of Commerce street, just north of St. Louis.

This is not only the largest and most important coconut fibre plant in the United States, but the only one. There was a factory of the same sort in California, but recently it burned. It was not the equal of this factory in size or equipment, nor was its location a good one. The coconut fibre used there was obtained from Samoa, some 4,000 miles away, while the product was sold in the Eastern states, fully 3,000 miles in the opposite direction. The Mobile factory gets its fibre from the islands of the Caribbean sea, distant but 1,400 miles, and its product can be sold near at hand, the most distant points of sale being not more than 800 miles. The product of the California factory had a ready sale, and it is argued from this that the Mobile enterprise will meet with success.

The fibre is brought here on the nut and is manipulated until it can be used for all the purposes for which horse hair is found useful, while the cost is very much less than horse hair. The principal use is that of stuffing for mattresses. It is said not to lump or lose its shape and to be peculiarly objectionable to the genus cimex lectularius.

In the north warehouse of the three combined in one building is stored the stock of coconuts. These are taken to the second and third floors by a conveyer for storage, and then sent down to the first floor, when required, by means of chutes. On the first floor the nuts are husked, six Jamaica negroes performing this work. Each has a knife something like a big chisel, fixed upright in a cast iron standard. To husk a nut, the husker lifts it in the air and brings it down heavily upon the knife, so that the blade sinks into the husk; then, by a wrenching motion, the husk is riven and the nut falls out. The negroes are skilled in this work and are very quick at it. They were all living here when the factory started. They have been engaged for some months in husking and have piled the first floor to the ceiling with the husks. There are about 140,000 coconuts and husks in stock, a supply sufficient to run the factory six weeks.

In the middle warehouse are machines for clean-

ing the fibre and removing all the softer material. To this end, the husks are placed in a breaker, where they are crushed by rollers. The refuse is carried off by spiral and sprochet conveyers to the furnace room, where it is used for fuel.

The fibre is next treated to a steam bath, chemically prepared, after which it is carried and picked in machines devised for this purpose. It then goes by a system of conveyers to the third floor, where it is spread out and dried. Next it is brought to the second floor and twisted into ropes, by means of rope-making machines. This is to give the fibre a "curl." Aftr this the ropes are placed in a dryer, worked by a fan, which forces air to pass over 5,000 feet of steam piping. When thoroughly dried it is put in a machine which untwists the ropes and picks the fibre apart, though the cull of each strand remains as a permanent characteristic. The fibre is then packed in 200-pound bales and is ready for market.

The middle warehouse lower floor also contains the engine, of Erie make, 50 horse-power, while in the south warehouse, lower floor, are the boilers two in number, each 50 horse-power, of Erie manufacture.

Throughout a perfect system of conveyers is used, so that little or no handling of the material is required. The machines are automatically loaded and their product carried through the circuit in the same manner. All refuse is quickly removed to the furnace room. The company proposes also to do away with the dust that is thrown out from some of the machines, and a dust conveyer will soon be at once introduced.—*Straits Budget*.

THE NAHALMA TEA ESTATE COMPANY, LIMITED.

REPORT OF THE DIRECTORS OF THE NAHALMA TEA ESTATE COMPANY, LIMITED,

To be presented to the shareholders at the first annual ordinary general meeting to be held on Thursday, 6th June 1895.

The Directors have the pleasure to submit the general balance sheet and profit and loss account for the nine months ending 31st December 1894, duly audited—

	£	s.	d.
The net amount at credit Profit and Loss Account at 31st December 1894, after providing for General Expenses, Directors' and Auditors' Fees, Interest On Debentures, &c.	2,287	8	1
An interim Dividend of 4 per cent. on the ordinary shares was paid 13th December 1894, amounting to ..	560	0	0
It is now proposed to pay a final Dividend on the ordinary shares at the rate of 2 per cent. (making a distribution for the nine months at the rate 8 per cent per annum free of Income Tax), which will absorb	280	0	0
It is proposed to write off the preliminary and other Expenses connected with the formation of the Company, requiring	175	15	2
It is proposed to place to credit of Debenture Redemption Fund	625	0	0
Leaving to be carried forward to next year, subject to payment of Income Tax on profits, a balance of ..	346	12	11
	£2,287	8	1

The Directors recommend the distribution of a final dividend at the rate of two per cent. on the ordinary shares of the Company payable so soon as the realization of the produce permits, making, with the interim dividend paid 13th December 1894, a distribution at the rate of eight per cent. per annum, 1st April to 31st December 1894, such dividend to be paid to those shareholders whose names appear on the share register on the 6th June 1895, after which date such shares will be transferable *ex* such said dividend.

The acreage of the Company's properties on 31st December last was—

Tea in full bearing	..	..	436
Tea not in bearing	..	..	10
Jungle	..	..	246
			692 Acres

The Ceylon Manager reports the estates in good order. A new turbine is now being erected which it is hoped will effect a saving in the consumption of wood. With a favourable season, the crop for 1895 is estimated at 220,000 lb. The Directors deeply regret the loss the Company has sustained through the sudden death of Mr. Hugh Hodgson Anderson, the late Secretary of the Company. Mr. John Abernethy, the Director retiring by rotation, being eligible, offers himself for re-election. The Directors ask that their remuneration may, from the date of the formation of the Company, and in future, be paid to them free of Income Tax. Messrs. Fox, Sissons & Co., Auditors to the Company, offer themselves for re-election.

THE EADELLA ESTATES COMPANY, LIMITED.

(*By Telegraph.*)

KANDY, 3rd June 1895.

The Report was adopted and a dividend of 13 per cent was declared. The remaining capital is R10,000 called up. There were present Messrs. Gibbon (Chairman, in the absence of Mr. Forbes Laurie), Gordon Pyper, Kynaston, and Munton, besides leading share holders who were represented by proxy.

Your Directors have pleasure in submitting the annexed statement of accounts and balance sheet for the past year ending 30th April 1895.

The working and yield of the estates have been so far satisfactory that, despite the lamentable fall in prices of cocoa and disappointment as regards that product, it has been more than compensated for by the returns from tea, and the Directors are gratified at being able to show a considerable amount of profit to be dealt with by the shareholders.

After writing off 10 per cent depreciation on factory and machinery, and 2-5th of preliminary expenses (1-5th more than last year), there remains at credit of profit and loss R20,936·63, and it is recommended that a dividend of 13 per cent be paid, carrying forward R1,436·63.

The clearing of last year has been very successful as regards cocoa and shade, but less so in respect of Liberian coffee, the vacancies in which will all be supplied with basket plants during the present monsoon.

Another clearing of 52 acres is felled, roaded and drained, is being prepared for planting with same products. Both clearings will be planted up with coconuts.

The 221 acres tea gave about 465 lb. per acre. The yield of cocoa was 188¼ cwt., and Liberian coffee 100 bushels cherry.

CAPITAL.—In view of lage extension of new clearings, it will be necessary to call up the remaining capital of R10,000.

THE TONACOMBE ESTATE COMPANY OF CEYLON LIMITED.

Report of the first general meeting of shareholders in the Tonacombe Estates Company of Ceylon Ltd., held at Ambewatte House on Monday the 3rd June 1895.

Present:—Messrs. W. H. Figg (Chairman) W. Bowden-Smith, H. Cumberbatch, F. J. de Saram.

By Attorney . Messrs. A. Fetherstonhaugh, W. S. Bennett, Major W. F. Bunn.

Proposed by the CHAIRMAN and seconded by Mr. F. J. DE SARAM:—"That the report and accounts presented by the Director be adopted." Carried unanimously.

Proposed by Mr. F. J. De SARAM and seconded by Mr. W. BOWDEN-SMITH :—

"That a dividend of 5 per cent on the paid up shares be declared payable forthwith" Carried unanimously.

Proposed by Mr. W. BOWDEN-SMITH and seconded by Mr. F. J. de SARAM. :—

"That Messrs. Campbell, Cumberbatch and Figg the provisional Directors be elected Directors for the current year" Carried unanimously.

A vote of thanks to the chair terminated the meeting.

ACREAGE.—The Acreage of the Company's properties is as follows ;—

Tea in bearing	321	acres
Tea in partial bearing	42	do
Tea not in bearing	91	do
Cleared for planting in April	14	do
Coffee	75	do
Cordamoms	65	do
Forest and Timber	74	do
Uncultivated land	954	do
Grand Total	1,636	do

It having been decided that the Estate year shall end on the 31st March, your Directors have now pleasure in preseuting their first report covering a period of nine months.

During the nine months under review 80,775 lb. tea have been secured and realised an average of 58¼ ct. per lb.

The total cardamoms picked amounts to 13,747 lb. of which say 5,000 lb. have sold at an average of Rs 1·64 per lb. The balance is estimated in the accounts to realise the some price.

303 29-32 Bushels Coffee have been harvested, and realised R5,371·96, or R17·67 per bushel.

The total expenditure amounts to R42,009·56.

The balance available after paying all outstandings amount to - - - R26,727·20, and the Directors propose distributing it as under :—

To pay a dividend of 5 per cent on the Ordinary Shares..	R14,000·00
To write off Preliminary Expenses	6,446·13
,, cost of Tea Extensions	5,879·89
To carry forward to next account	401·18
	R26,727·20

The Factory has been considerably enlarged, and is now capable of dealing with from 200—225,000 lb. made tea. Tea is being manufactured for an outside estate on favorable terms.

An engine has been ordered, as it has been thought desirable to have alternative power in case any unforseen accident should happen to the turbine. This will cost, say, R8,000, and will be charged in current year's expenditure.

During 1895-96 it is proposed to plant 84 acres of land (30 of which are virgin forest) with Tea and 15 acres with Cardamoms.

The prospects for next season appear to be good. The Tea is estimated to yield 130,000 lb.: Coffee 350 bushels Parchment Cardamoms 17,000 lb. on an expenditure of R53,662·50.

The Provisional Directors retire, and, being eligible, offer themselves for re-election.

VARIOUS PLANTING NOTES.

FRUIT FROM THE ANTIPODES.—Since our last issue, one of the P. & O. Company's fruit steamers has arrived from Hobart, Melbourne, and Adelaide. From Hobart there are 22,393 cases and 212 half-cases ; from Melbourne, 894 cases and 32 half-cases ; Adelaide sends 121 cases ; or, altogether, 23,408 cases, and 244 half-cases of Apples.—*Gardeners' Chronicle*, May 11.

AN ANONYMOUS DONOR OF £80,000.—The Parks and Gardens Committee of the Liverpool Corporation met on Wednesday last and visited the recreation ground in Wavertree, presented to the city by an anonymous donor at the last council meeting. Votes of thanks were passed to the generons donor, and it was stated that he had expended over £80,000 on the purchase and laying out of the land.—Ibid.

COFFEE.—We have received from Mr. W. S. Terry, of Hilo, a sample of coffee raised by him in Hilo village, from trees that have been planted only three years. These trees have borne quite young and abundantly. The berries were large and plump, perhaps too large for the trade, as smaller berries are generally preferred. But the early crop from trees only three years old is a good omen, and affords encouragement to other coffee-growers.—*Hawaiian Planters' Monthly*.

TASMANIAN APPLES.—Tasmanian Apples are arriving in excellent condition this year, and a portion of the cargo of the ss. "Cuzco," which brought 12,000 cases, was recently sold by auction at Covent Garden Market, realising prices which are said to be remunerative to the Colonial growers, whilst they are decidedly satisfactory to the London consumers. The excellent quality of the Tasmanian, Ribston, Cox's Orange, New York and Sturmer Pippins, and of the Scarlet Pearmain, Alfriston, and Prince Alfred are widely recognised. They fetched from 9s to 16s. per case, coming into competition with the last of the Nova Scotia and Canadian Apples, which are selling at from 16s to 20s per case.—*Journal of Horticulture*.

A NEW HYBRID EGG-PLANT.—Mr. Hart writes from Trinidad :—"Among seedlings of Melogena or Aubergine (Solanum melongena), L, there lately appeared in our gardens a plant with the shrubby habit of the Aubergine, or Egg-Plant, and with similar flowers, but bearing fruit having the exact form of a deeply sectioned Tomato, and of a bright red colour. The size of the fruit is about 2 inches in its widest diameter. The interior of the fruit has more the appearance of the Egg-Plant than the Tomato, but there is a likeness to both. It would make a very good decorative plant, as the fruit appears to be of a more lasting character than either the Egg-Plant or the Tomato. I should be glad to know if anyone has seen a similar production. J. H. Hart, Supt., Royal Botanic Gardens, Trinidad, W.I."—*Gardeners' Chronicle*, May 11.

SISAL HEMP (AGAVE RIGIDA, VAR. SISALANA) AT VERA CRUZ.—In a report on the trade and commerce of Vera Cruz, reference is made to the Henegren or Yucatan hemp, which has become more generally known of late as Sisal, stated to be from the fact that the fibre was first exported from Sisal, a small coast port about 27 miles west of Progreso. In view of the low price that has ruled for Sisal hemp for some time past, it will be of interest to know that the export from Vera Cruz varies from 19,000 to 45,000 bales per month, the average weight of each bale being about 350 lb. It has been remarked that this year 1895 will have the maximum quantity of land under hemp cultivation in Yucatan, which means that the production of hemp has reached its limit. Under the existing circumstances of low prices, high monetary exchange, and scarcity of the Indian labour, many of the farmers are planting Maize instead of replanting hemp. New lands, as well as old hemp-growing areas, are now being used for growing Maize and other products.—Ibid.

THE IMPORTATION OF BANANAS INTO AMERICA.—In a recent Consular report from Baltimore, it is stated that of all the tropical fruit now imported into the United States, the Banana reaches there in the largest quantities. Its cultivation for the foreign market in Jamaica only dates back about twenty years, and it is from that colony that fully eighty-five per cent. of those consumed in the Atlantic States are now derived. There are at present four steamships exclusively employed in the Banana trade with the port of Baltimore, and which can land their fruit from Port Antonio in a little over five days, and almost as fresh and green as when cut. A proportion of each cargo is disposed of in the city of Baltimore, but the largest part is transferred to heated or refrigerated cars, according to season, and sent by rail as far west as Chicago. In connection with the Orange culture in Florida, it is stated that the crop which is the chief source of supply for the eastern States was completely destroyed by the severe weather, and that the growers are actually buying Oranges in California to meet their engagements.—Ibid.

PERAK AGRI-HORTICULTURAL SHOW.—Perak is to have its show! An Agri-Horticultural Show will be held at Batu Gajah on Friday and Saturday the 12th and 13th July. Well done the go-ahead Straits Settlement!

NATAL TEAS were lately shewn freely at the Rand Agricultural Show by Messrs. Hindson & Co., a firm that began planting in 1887 and has gradually increased its output from 600 lb. a year to close on 300,000 lb. The capital invested is said to be £60,000, from 500 to 600 acres being planted with yearly additions. The firm's estates are said to be fully equipped with machinery.

TEA.—In the matter of over-production of tea the *Madras Times* makes the following comment:—

At a recent meeting of the Dimbula Planters' Association, Ceylon, the chairman put forward a resolution to the effect that the Association trusted that in future Government would not sell land for tea cultivation at an upset price of less than R100 an acre, or more, according to locality. The chairman's object was to prevent over-production. The resolution, which was lost by a large majority, caused much discussion, one planter making the sensible remark that whether or not Ceylon planted another acre of tea, or shut up altogether no Indian man would care, and there are thousands of acres in India to every ten acres in Ceylon. To hear the over-production party talk one would think Ceylon was the sole tea-producer of the world. They forget that Ceylon is a very little place after all is said.

THE SURVEYOR-GENERAL'S RETURN OF RAINFALL in Ceylon during 1894 and the means during different periods, is issued as a Supplement to yesterday's *Gazette*. We shall give a *resumé* in due course, meantime remarking that the heaviest fall of rain recorded for last year was on Sembawatta, Kitulgala (1,600 feet elevation), namely 221·29 inches distributed over 222 days, the means for 11⅔ years being 218·38 inches, while the minimum fall was at Manaar with 24·94 inches on 60 days, the means during 24⅔ years being 37·84 inches. The next heaviest falls were:—St. Martin's, Rangalla (3,500 ft.) 168·62 inches on 196 days; Digalla, Awissawella (400 ft.) 168·32 inches on 209 days; Dunedin, Awissawella (400 ft.) 166·98 inches on 204 days; and Coldstream, Watawala (3,800 ft.) 159·94 inches on 208 days.—The Sembawatta fall of 221·29 inches compares with that on Padupola given in the P.W.D. return which for last year was .232·71 inches.

COFFEE IN NYASSALAND.—We are much interested by the letter on this subject which Mr. D. B. Cameron of Assam sends us, our correspondent being brother-in-law to Mr. Duncan who went to Nyassaland as horticulturist to the Church of Scotland Mission in 1878. Mr. Cameron had also a brother associated with Mr. Buchanan of Zomba who died there in 1893. We find that though Commissioner Johnston, C.B., in his official Report, published in August last year, through some curious blunder, distinctly gives Mr. John Buchanan, C.M.G., the credit of bringing out with him "a small coffee plant from the Edinburgh Botanical Gardens"; as the very beginning of the coffee enterprise yet Mr. Buchanan himself in his book on the "Shiré Highlands" published in 1885, distinctly gives the credit where it is due. We quote from the latter as follows:—

With Mr. Duncan's arrival in 1878 came another supply of seeds, and besides, a variety of fruit-trees from Grahamstown. Mr. Duncan brought with him from Edinburgh three coffee and one tea plant, and a number of grape-vine cuttings. Two of the coffee and the tea plant ultimately died; but one coffee-plant (*Coffea arabica*) lived and grew, and has shown that coffee is at home in the Shiré highlands.

It is strange that Mr. Johnston in writing his Report, should not have referred to Mr. Buchanan's book.

COFFEE CULTIVATION IN MAURITIUS—both of the Liberian and Arabian varieties continues to attract attention and the local press write freely on the subject, quoting largely from the *Tropical Agriculturist*. We see no more mention of tea in our latest file of papers.

KOLA-GROWING IN CEYLON.—We are indebted to Mr. W. J. Robson for two very nice, healthy plants of Kola from his Matale plantation, and a fresh gathered pod of considerable size. We shall see that a due trial is given to all and the result for the lowcountry reported later on.

THE ALLIANCE TEA CO. OF CEYLON, LD—for which Messrs. Whittall & Co. are Agents and Secretaries—now own the following flourishing tea estates:—Aberdeen and Lovat, Uda Radella, Luccombe Group, Calsay, Gleneagles and Thornfield aggregating a total extent of 2,853 acres of which 2,369 are cultivated, and all but 14 acres in tea.

CONDENSED COFFEE COMPANY, LIMITED.—Registered by Warner and Seligman, 21, Great Winchester-street. E.C., with a capital of £1,500 in £1 shares. Object, to enter into an agreement with W. H. Thew, and, generally, to carry on business as tea and coffee growers, blenders, and merchants. The directors are to be nominated by the signatories. Qualification, one share. Remuneration £50 per annum each.—*Financial News, London*, 13th May.

LABORERS FOR CUBA.—Several Manzanilla planters and merchants, in combination with a certain number of emigration agents and owners and consignees of steamers in Spain, are endeavouring to bring over from Galicia, Catalonia and the Canary Islands, 50,000 laborers within the term of six years, to be exclusively employed on plantations on the southern side of the island, and it is said that 5,000 Canarians have already been engaged and will arrive at Cuba, together with 1,000 more from the peninsula, the latter exclusively for account of Manzanilla planters. Those workmen, who are selected among the class of aggriculturists and are accustomed to labor in the fields, are at from 20 to 40 years old and will earn $15 gold per month, with board.—*Ibid.*

INVENTIONS AND PATENTS.—In his report on the working of the Calcutta Patent Office during the past year Mr. G. W. Forrest discusses the question of whether it is better to adopt the English system of entering into no inquiry as to the novelty of patents, or the American system of having a thorough investigation made in each case. He points out that, in India, the Act leaves it discretionary to make inquiry into novelty, but, owing to there being but few competent experts in the country, the exercise of this power must necessarily be more or less unsatisfactory. In England, he finds the consensus of opinion to be that it is better to make no inquiry into novelty. The policy which has been pursued, therefore, has been to curtail, as far as possible, all preliminary investigation, except in cases in which the invention is likely to effect the interests of the State, or that of the poorer classes who cannot protect themselves.—*Pioneer*, June 1.

COCONUT-PLANTING IN THE NORTH-WEST. The progress of coconut palm planting in the Puttalam district is shewn by the following figures summarized from a return received for our Directory:—

Division.	Acres Cultivated.	No. of Trees.
Arachchewille	.. 385	17,300
Chenakudeyappo	.. 495	33,200
Mawalkundu	.. 475	29,500
Periyakulam	.. 500	35,000
Sembatta	.. 775	50,000
Bammewattan	.. 374	25,400
Periya Ottapana	.. 325	19,900
Palachola	.. 895	56,700
Daluwa	.. 500	35,000
Talapalu and Manjadi	.. 800	54,000
Total	.. 5,524	356,000

A DAY AFTER THE FAIR.—Holders of Ceylon cacao must, we fear, be pretty sick of it, judging from the following from a London correspondent:—"Forty shillings was the highest bid got by ——for some Ceylon cacao last Tuesday (7th May), for which one hundred shillings was refused in 1893."

"COLONIA: THE COLONIAL COLLEGE MAGAZINE." Spring Session, April, 1895. Contents:—The Colonial College; Old Students' Column: Communications from Africa, Australasia, Canada, India, United States; A Visit to Canada; The Opportunity! Oranges and Vegetables in Florida; Notes on New Zealand; Water Supply; How to Cultivate the "Bump of Locality"; Frozen Meat; Estate, Farm and Building Notes; College Notes; The Athletic Club Report; The College Evening Entertainments; Notice to Correspondents; Old Students' Directory (revised).

MR. ARTHUR SINCLAIR, SENIOR—has taken up his residence on Primrose Hill, Kandy, in the bungalow which he occupied for so many years in the "sixties" and "seventies" when Visiting Agent for Messrs. Lee, Hedges & Co. (who, at the time had a very extensive estate connection) and for a time acting for Messrs. Geo. Steuart & Co. Mr. Sinclair has been planting tea on the old place; but he will doubtless be making a round of the districts, to note the very great changes wrought in the past decade. Mr. Sinclair paid flying visits upcountry on his trips to and from Australia in recent years; but he did not stay long enough to note in detail the revolution.

A NEW DUTCH COCOA COMPANY.—The business of the firm of J. & C. Blooker, cocoa manufacturers, of Amsterdam, has been turned into a company, under the style "Internationable Cocoafabrieken." The object of the company is to manufacture cocoa, cocoa-powder, chocolate, butter of cooca, and other cocoa-derivatives, to trade in these articles and the raw materials from which they are made, and the buying and selling of cocoa-products made by third parties. The capital of the company is 1,000,000f. (about 85,000*l*.), in 200 shares of 5,000f. each, of which the firm of J. & C. Blooker obtain 120 in consideration of the transfer of their factory to the company. The company will issue debentures to the extent of 750,000f. (625,00 *l*.), bearing 4 per cent. interest, of which 300,000f. are irredeemable and secured in first mortgage on the company's factory, and 450,000f. redeemable at any time. The whole of the debentures are taken up by the three Messrs. Blooker, one of whom, Mr. D. Blooker, will act as managing director, and a second, Mr. J. Blooker, as secretary.—*Chemist and Druggist*, May 18.

LIGHT AND CHEAP RAILWAYS IN NEW SOUTH WALES.—We notice that the Assembly of New South Wales has sanctioned the construction of a small railway from Jerilderie to Berrigan. It is to be a cheap line, at £2,000 a mile, and will run for a considerable distance on the main road. There is also a stipulation that landowners are to give the necessary land. In referring to ways and means, the Premier Mr. Reid said that there was plenty of money for works of this character—indeed, he had but to hold up his little finger, and he was afraid of the quantity of money that might now be borrowed in London. But he was keeping himself proof against the temptation.

TALGASWELLA TEA COMPANY.—We direct attention to Mr. E. S. Grigson's very satisfactory Report and we learn on the best authority, that for the four months (January-April) this year, the tea has realised 17 cents average above last year and the quantity made shows an increase of 13,000 lb. Altogether there is better news of tea in the Southern Province than we have seen for a long time: Mr. Abeyesundere is making capital tea and gathering big returns on his place and others are doing well. The South has certainly the advantage in cheap, abundant labour.

THE SANDAKAN COFFEE ESTATES COMPANY (LIMITED) has issued an advance prospectus. The capital is £25,000 in £1 shares, of which the vendor takes 5,000. The object of the company is shown in its title.—*L. and C. Express*, May 17.

CEYLON TEA IN AMERICA.—The Committee of Thirty have nominated Mr. Wm. Mackenzie as permanent Tea representative in America, subject to the approval of "the Governor in Council"—who must henceforth approve of all that is proposed to be done. We had no idea Mr. Mackenzie would accept a post that will necessitate a couple of years at least, we should say, of work in America. If he does, however, and cordially works with Mr. Blechynden, we may anticipate some good results.

MANURE IN CEYLON.—The demand for manure in Ceylon is a healthy sign, inasmuch as it indicates that cultivators are alivo to the fact that the fertility of the soil must be maintained. Apart from the common commercial fertilizers such as bone dust, castor cake, &c., there is a good market now for fish manure, imported and locally prepared, while blood from the Colombo slaughter-houses and night-soil treated in Kandy are also being utilized. Of late people from South India have been going about offering such substances as cattle manure dried in cakes, dry goat and sheep manure, and even ashes—all brought over from the neighbouring coast. The prices demanded per cwt. are R2·00 for the first, R2·50 for the second, and R1·50 for the third!—*Chemical Trade Journal*, May 11.

YAMS.—Our crop of yams was harvested in February, and the results were nearly equal to last year's return. Last year our return was 0·68 lb. per square foot or thirteen tons to the aere, while this year our return stands 0·63 lb. per square foot which is slightly less. The heaviest weight of "Negro Yam"—one root—was 30¼ lb. "Yellow Yam" gave roots weighing 11 lb.; "Afou" 14 lb., and "Devil Yam" 20 lb. to 25 lb. The "Buck Yam" is an excellent variety and splendid for table, but does not yield a heavy return. The "Yellow Yam," which is the same as the "Dominica Yam," yields an excellent table dish. The "Negro" and "Barbados White Yam," the "Horn Yam" and the "Snake Yam" proved to be of excellent quality, and superior in many respects to those commonly grown in Trinidad.—*Trinidad Bulletin.*

SPONGES MADE OF COCONUT FIBRE—WHAT NEXT?—A Fort mercantile man sends us the following extract from a home paper and asks if it is news to us. It certainly is that artificial sponges are being made out of coconut fibre. Has the experiment been tried in Ceylon? We quote as follows:—

The report that artificial sponges have been made by chemical processes out of coconut fibre has given a new incentive to the industry of growing coconut palms in some of the Pacific islands. The fibre of the coconut and the long leaves of the trees are fine and strong, but very dissimilar to sponge in texture; it would require a stretch of the imagination to see any connection between the two in any way whatsoever. But science has created stranger births than this. The fibre of the coconut is bleached, pressed, beaten, and then worked up into a mass by boiling until the whole is a thick mucus substance. When dried it feels like a tough, dry sponge, with no elasticity or spring about it. It is full of holes and cavities, so that air can go in and out of it. The new sponge is then passed through other peculiar processes. It is steamed and worked artificially by machinery or the hand until it becomes as pliable as the finest sponge. This process is continued until the mass is soft and silky to the touch. While being steamed it can be pulled and moulded into any form or shape, but as it dries again it becomes tough and strong. After drying, the sponge is finally bleached for the last time. If too dark it is made lighter by being bleached with steam and sulphur, and if not of the proper yellow it is artificially colored with harmless chemicals. The artificial sponge is then ready for selling, and it would require an expert to detect it from the genuine article.

AN OLD COFFEE PLANTER—leaves the island today in Mr. Joseph Fraser of the Pitakande group of Matale estates, on a trip home of from 6 to 9 months. Mr. Fraser is well-known to be very successful in his cultivation of tea on old coffee land and he has now added cacao to his products. Asked today how tea on old coffee land has met his expectations, he gave us a decidedly concise and canny yet significant reply:—"Tea on my places has just done twice as well as ever I expected it to do."

THE AUSTRALASIAN DEMAND for Indian tea has, we are glad to see, opened well this season. Messrs. Forbes and Walker learn by wire that the exports compare as follows:—

TO AUSTRALIA AND NEW ZEALAND.

	lb.
From 1st May to 31st May (by wire)	..269,000
Same period last year	..106,000

For Ceylon tea this year, the same firm give the following comparison:—

TO AUSTRALIA AND NEW ZEALAND.

	lb.
Total export from 1st January 1895, to date..	4,200,000
Same period last year ..	..3,546,000

THE "AGRICULTURAL GAZETTE OF NEW SOUTH WALES" Vol. VI. Part 4 April 1895, has for contents:—The Black or Spear Thistle—(Carduus lanceolatus, Linn) J H Maiden. Weeds of New South Wales—J. H. Maiden. Part II. Digests of Reports of these from Country Districts. Botanical Notes.—Spread of a Cassia this Season; A Bulbous Plant suspected to be poisonous to Stock; Some Plants recently introduced into the vicinity of Homebush Sheep and Cattle Sale-yards, J H Maiden. Cross-bred Sheep and Rotation of Crops—J Coleman. Report of Sugar Beets Grown at Hawkesbury College Farm—June, 1894-95 (with Note by the Chemist—By the Principal and the Experimentalist. Some Fruit Pests.—A H Benson. Some Australian Wesvilsor Snout Beetles—A S Olliff. Entomological Notes from Hawkesburg Agricultural College—C T Musson. The Honey Bee.—R Holms. Part II.—The Anatomy of the Reproductive Organs of the Queen and Action of Fertilisation.—R Helms. Bee-keeping—Uniting Nuclei and small Swarms. Albert Gale. Chemical Notes.—Bonedust from Orange; Honey from Richmond River; Weight per bushel of this Season's Wheat. F B Guthrie. Practical Vegetable and Flower Growing.—Directions for the month of May. Orchard Notes for May.—General Notes. 28-Spotted Lady Bird and Tomatoes; Ramie Fibre; Growth of Forest Trees. Agricultural Societies' Shows, 1895.

COCONUTS AND TRICKING A CRAB.—In Africa there exists a certain member of the crab genus commonly known as the Great Tree Crab. This peculiar shell-fish has an offensive trick of crawling up the coconut trees, biting off the coconuts, and then creeping down again backwards. The theory is that the nuts are shattered by the fall, and the Great Tree Crab is thus enabled to enjoy a hearty meal. Now, the natives who inhabit regions infested by this ill-conditioned crab are well aware that the lower portion of the crab's anatomy is soft and sensitive, and they believe that the "bivale" was thus constructed in order that he might know when he had reached the ground, and when, consequently, he might with safety release his grasp of the trunk. So what they do in order to stop his depredations, which often ruin the coconut crops, is this: While the crab is engaged in nipping off the coconuts, they climb half-way up the trees and there drive in a row of long nails right round the tree, allowing an inch or so of the nails to project. The crab has no knowledge of disaster nor yet of the fitness of things. As he descends, the sensitive part of his body suddenly touches the nails. Thinking that he has reached the ground, he naturally lets go. Instantly he falls backwards and cracks his own shell on the ground.—*Public Opinion.*

OVER-PRODUCTION IN INDIA—is now the chief risk before Ceylon tea planters—and the extract we give elsewhere from the *Planters' Gazette* shows the enormous impetus to planting extension in the Dooars and elsewhere, given by the foolish cry in Ceylon and the unfortunate response of Government, that no more land should be sold for tea. What Ceylon might do, was the one great fear before Indian investors up till last year; and now they are making up for lost time, while every lb. of their tea is equal in strength to 1¼ lb. of Ceylon at least. In Bengal alone the area cultivated, increased last year from 93,000 to 110,000 acres. There is nothing for it but to conquer America for our teas, by *Advertising.*

SHORT LABOUR SUPPLY.—A proprietor writes:—"All very well to say Estates don't get proper work out of their coolies, but can they *double* it? Ceylon needs 20 to 30,000 additional labourers and next year will need as many more to keep pace at all with the leaps and bounds of tea! "Clippers" are the only remedy if labourers run short, but the fault with these machines is they don't take off bangy."—— Has our correspondent examined the figures we gave on Saturday? Where are the 147,000 surplus coolies? ("A good many of them, serving under Sinhalese!" answers today in person, a well-known Northern planter to our astonishment.) We call attention to further letters on the question; but must again protest against any meddling with, or transfer of the Cess before the end of 1896 at the earliest.

PERAK, KINTA MONTHLY REPORT FOR APRIL, 1895. Mr. F. W. Mais of the Trigonometrical Survey, visited the District on business connected with his Department. The Resident Engineer for Railways made a successful trial trip over the railway line between Kota Bharu and Kampar stations on the 30th, preparatory to opening the through service from Teluk Anson to Ipoh on the 1st May. The survey for railway extension from Ipoh to Tanjong Rambutan (8 miles) is proceeding rapidly. Already about a mile of earthwork has been constructed, so that the whole work should be completed well within this year. Good progress has been made in laying the line for the much needed Ipoh water-works, and when the pipes arrive from England the completion should be rapid.—*Perak Govt. Gazette.*

COCONUTS IN FLORIDA.—A writer in the *Florida Fruitgrower* speaks of coco-palms in that region bearing at the rate of 200 to 500 nuts annually. We deem this to be almost a physical impossibility; and certainly when we personally travelled through Florida in 1884, we saw nothing in the soil, climate or vegetation to warrant such returns. Coconut palms were few there ten years ago, and we confess we did not happen to go to where they grew—our object being rather to inspect orange gardens. But surely the Florida cultivator who speaks of anything over 200 nuts, includes all the small nuts which drop immaturely? Can he give us undeniable testimony that 200 fully matured nuts are gathered from single palms in a year? He speaks of a large demand by planters for "sprouted nuts" at from 10 to 15 dollars—say 35 to 50 rupees—per 100. Florida is, no doubt, going to be a great palm-growing land; already, says the writer we quote:—"We have nine-tenths of the coconuts grown in the United States, and I have yet to see one killed by the hard winter of '94-95." Last winter played havoc with the orange trees, and it is marvellous that the palms withstood the frost.

LIBERIAN COFFEE IN SERDANG-SUMATRA; No. VII.

(*By an ex-Ceylon Planter.*)

LIBERIAN COFFEE—FACTS, NOT FANCIES.

The following figures are all calculated in katties and piculs:—1 kattie=1⅓ lb., 100 katties=1 picul, 1 picul =133⅓ lb. avoirdupois.

The figures given on page 50 of the Planting Molesworth work out thus:—

123,000 cherries=1 cwt. clean coffee. Ergo 137,146 cherries =1 picul clean coffee. So far Ceylon.

My experience in another country with old coffee and poor soil is that 220,000 cherries =1 picul clean coffee.

Here in Serdang it has been found that 160,000 cherries =1 picul clean.

It is of course well-known that the size of the cherry and of the bean diminishes as the tree grows older. Therefore the deduction is that the Ceylon figures were gathered from young coffee in good soil.

My figures were, as I have stated, from old coffee in poor soil.

The Serdang proof was from coffee between 4 and 5 growing in splendid land, but worked "on the cheap."

Here, I myself have counted several trees of 20 months old, and found several with fruit on them from 2,000 to 2,430 per tree. This is equivalent roughly to a kattie a tree. Trees planted 10 ft. by 10 ft. =435 per acre. Result, pl. 4 35-100th per acre before the trees are 3 years old. I do not, of course, pretend to state that *all* the 20 months old bushes are like this. But it will give nearer 2 piculs per acre than 1 before it is 3 years old. The trees are healthy and making new wood.

A neighbour has counted on some of his four-year-old trees, now rising five, as many as 4,000, 5,000, 6,000, and even 7,000 fruit on a single tree. Work this out at 435 trees per acre, and 2,000 cherries per kattie of clean coffee; and say if it is not better than a smack in the face with a dead rat.

I think I have given you sufficient food for reflection for today.

P.S.—Since writing the above I have received from an obliging friend the following:—

From coffee 18 years old, after having been abandoned for five years, the yield por tree was from 2 to 3 katties.

Each kattie = 2,212 beans clean coffee from 1,426 cherries. Both the yield after abandonment, and the large proportion of clean coffee (not parchment) from the cherry speak volumes for the soil.

There is a grand blossom out today; and young bushes though apparently choked with fruit, are sparkling with the snow-white flowers.

Best sign of all: the air is busy with the hum of bees.

A NEW CEYLON COMPANY.

The following are amongst the new joint stock Companies recently registered; The whole of the ordinary shares. The Ceylon Tea Trust, Limited, registered by the Nugget Exploring Company, Limited, 42 Old Broad Street, E.C., with a capital of £60,000 in 10s shares. Object, to adopt and carry into effect an agreement, made May 6, 1895, between A. Nelson, on behalf of this Company, of the one part, and the Nugget Exploring Company, Limited, of the other part; and, generally, to acquire, work, manage improve, develope, and turn to account tea estates or other landed property in Ceylon or elsewhere. The signatories, who take one share each, are F. C. G. Kitso, 3, Bernard Street, Russell Square. W. C.; A. H. Bailey, 32, Goldhurst Terrace East, N.W., E. C. Bredin, 58 Stratford Road, W.; H. W. N. Bonlend, 42, Old Broad Street, E.C.; C. B Ride, 131, Lisson Grove, N.W.; A.F. Roberts, 42, Old Broad Street, E.C.; C. T. Chevallier, 3 Throgmorton Avenue. E.C; A. J. Langley, 205, Milkwood Road, Herne Hill. The directors are to be elected by the signatories. Qualification 100 shares. Remuneration £50 each per annum. Condensed Coffee Company, Limited, with a capital of £1,500 in £1 shares. Object, to enter into an agreement with W. H. Thew, and, generally, to carry on business as tea and coffee growers, blenders, and merchants. The directors are to be nominated by the signatories. Qualification, one share. Remuneration, £50 per annum each.—*H. and C. Mail.*

THE AMSTERDAM CINCHONA MARKET.

Writing on May 9th, our Amsterdam correspondent observes:—"Today's cinchona-bark sale was a disappointment to most parties concerned. Although opening pretty firm, the feeling eased off as the sale proceeded, and the result was an average unit of only 2·92c.

Druggists' barks were very dull, and except for fine red qualities there was very little demand.

Mr. Watering, the Amsterdam merchant who has lately returned from an inquiry into the state of the cinchona-market in Java, states that to some extent he has a good opinion of the future of the article. There is no doubt (he tells me) that Java cannot go on shipping the quantities it is sending at present as uprooting is being carried on to a great extent and already there are some 5,000 bouws less under cultivation than formerly. At the same time it must not be expected that this means that Java cannot send the same quantity in 1895 as in the preceding year, as cinchona is such a peculiar article that the yearly crop can hardly be controlled. It is possible to allow the crop of bark remain on the trees a year or two, whilst the owner of a plantation has it in his power to increase the crop at his will at any given moment.

Cinchona cannot be grown at the present prices even in Java, and, therefore, every extra quantity shipped means plucking the hen instead of marketing the eggs. The more Java sends now the sooner the hen will be done for, but how long this may last is difficult to say.

There are rumours that the planters are taking more interest in the erection of the quinine-works in Java, and that, after all, the factory is likely to be founded, even if on a less extensive scale than was proposed; but more will be known of this in a short time..

Mr. Buchler, the Brunswick quinine-maker is now in Java. The exact object of his visit there is not known at present, but it is thought that it is in some way connected with Java quinine-works."—*Chemist and Druggist.*

NEW PLANTATION COMPANIES.

THE NYASSALAND COFFEE COMPANY, LIMITED.

Friday's *Gazette* in publishing the memorandum of Association of this Company states that the objects for which the Company is established is to procure two blocks of land, 3,500 acres in extent, and situated at Nyassaland, B. C. Africa, from Mr. J. H. Carson, and to plant the same with coffee and tea. The nominal capital of the Company is Rupees Three hundred thousand (R300,000), divided into three thousand shares of Rupees One hundred (R100) each, of which Rupees One hundred and Seventy thousand (R170,000) are now called up with power to increase or reduce the capital. In case the Company shall increase its capital by the issue of new shares, such shares may be issued upon the terms specified in the Articles of Association for the time being of the Company. A share has been taken by each of the following gentlemen:—Messrs. F. Macindoe, G. J. Jameson by his Attorney F. Macindoe, A. Orchard, E. R. Waldock, W. Shakspeare, E. M. Dowie and V. A. Julius.

THE KELANI VALLEY TEA GARDENS COMPANY, LIMITED.

The Memorandum of Association of this Company is published in the last *Gazette*. The objects for

which this Company is established are—To acquire the Kelani estate situated in the Kelani valley district of the Island of Ceylon, and to farm, manufacture, or cultivate tea, and or) any other products or trees, plants, or crops which may hereafter be approved and either on the said estate or elsewhere within or beyond the limits of Ceylon, and to prepare, manufacture, treat, or make marketable the produce of any such farming or cultivation, or any like produce, and to sell, ship, and dispose of such produce, either raw or manufactured, at such times and places and in such manner as shall be deemed expedient. The capital of the Company is R300,000 divided into three thousand shares of R100 each, with power to increase or reduce the capital. In case the Company shall increase its capital by the issue of new shares, such shares may be issued upon the terms specified in the Articles of Association for the time being of the Company. A share has been taken by each of the following gentlemen:—Messrs. Walter Seale, F. Macindoe, G. J. Jameson, E. R. Waldock, W. Shakspeare, V. A. Julius, and Edw. Booth.

DRUG REPORT.

(From *Chemist and Druggist.*)

London, May 16.

ANNATTO—Bright seed is in good demand at full prices, 20 bags from British India being all sold at from 4d to 4½d for good red.

CAFFEINE—We hear of very little business this week. A few pounds might probably be had at 27s per lb on the spot, and for delivery the market shows, perhaps, a slight touch of an easier tendency. In New York, according to reports dated April 27th, 5-lb lots have been sold at $9.50 per lb and "extreme scarcity" prevails.

CINCHONA—The principal parcel at today's sales was one of 43 serons "Crown" bark from Callao, which sold cheaply as follows:—35 bales fair sound Huanoco quill, at 6½d to 7¾d; and 8 serons Loxa, fair but partly mixed at 11d per lb.

COCA—Of a 21-bale parcel rather broken but dry Truxillo leaves, only two bales sold (damaged) at 7¾d to 9½d per lb; for sound leaves 10d is asked, a bid of 8½d being refused.

COCAINE—The fresh decline in the price of Hydrochlorate of cocaine, which we foreshadowed last week, has taken place, a 9d reduction being announced on Monday. The wholesale rates for cocaine in tins are:—Lots of 100 oz and over, 17s 6d; lots of from 25 to 100 oz, 17s 9d; lots of under 25 oz, 18s per oz. Bottles are charged 3d per oz extra.

ESSENTIAL OILS—At today's auctions the usual assortment of essential oils was offered, but hardly anything was sold except two cases so-called Cinnamon oil, which realised 7½d per oz. Thirteen cases yellow camphor oil were bought in at 30s per cwt. The other parcels offered do not call for any remark.

QUININE—Dearer; on Wednesday 10,000 oz H B or B & S bulk were reported sold at 12½d on the spot, and today 12¾d per oz was paid for 12,000 oz more. There are now only a few sellers at the last-named price. At auction 5,000 oz were offered and bought in at 12½d.

VANILLA—Rather dearer, at from 15s 6d to 25s for good to fine bold.

INDIAN PATENTS.

Calcutta, May 22.

Specifications of the undermentioned inventions have been filed under the provisions of Act V of 1888:—

For the treatment of Textile Vegetable Fibres.—38 of '91.—Alfred Francis Bilderbeck Gomess, of 21, Alfred Place, West, South Kensington, in the County of London, England, Chemist, for a new and improved process for the treatment of textile vegetable fibres. (Filed 12th December 1894.)

For making Glazed Black Tea.—53 of '95.—Dr. A. S. Lethbridge, Indian Medical Service, No. 1, Kyd Street, Calcutta, for making glazed black tea whereby a waste product in the ordinary process of tea making is utilized, and a tea is produced which has a much higher commercial value than the tea produced by the ordinary methods of manufacture now in use. (Filed 18th April 1895.)—*I. and E. Engineer.*

THE CEYLON TEA ROLLER CASE. LAW REPORT MAY 18TH.

JUDICIAL COMMITTEE OF THE PRIVY COUNCIL.

(*Present*:—LORD WATSON, LORD HOBHOUSE, LORD MACNAGHTEN, *and* SIR RICHARD COUCH.)

BROWN AND THE COLOMBO COMMERCIAL COMPANY LIMITED V. JACKSON.

This was an appeal from a decision of the Supreme Court of Ceylon of March 21, 1894, affirming a judgment of that Court of September 13, 1892.

Mr. Moulton, Q.C., Mr. Bousfield, Q. C., and Mr. J. C. Graham appeared for the appellants; Sir Richard Webster, Q. C., Mr. Finlay, Q. C., and Mr. W. N. Lawson for the respondent.

The case was recently argued before a Committee consisting of the Lord Chancellor, Lord Watson, Lord Hobhouse, Lord Macnaghten, Lord Morris, and Sir Richard Couch, when they reserved judgment.

LORD WATSON, in now delivering the opinion of their Lordships, said,—The respondent, William Jackson, a mechanical engineer at Aberdeen, obtained letters patent for Ceylon, granting him the exclusive privilege of using an invention relating to "machinery or apparatus to be employed in imparting the necessary curl to tea leaf by means of flat or hollow-fluted surfaces" for 14 years from July 4th, 1881. The present action was brought by the respondent in the District Court of Colombo against the appellants, one of whom is a company registered in England and carrying on business as estate agents and engineers in Colombo, and the other a merchant in Colombo, who act as assistant manager of the company. In this plaint the respondent charged both appellants with infringement of his patent by importing into, selling, and using in Ceylon machinery and apparatus for rolling tea eaves, having substantially the same arrangements with those described in his specification; and he craved an injunction and an account of profits. The main and the only defence stated which it was necessary to notice consisted in a denial of infringement. The learned judge of the District Court found that the patent had not been infringed, and dismissed the action. His decision was reversed, on appeal, by the late Chief Justice Burnside and Mr. Justice Lawrie, who remitted the case in order that an injunction might be granted and an account of profits taken. In pursuance of the remit the District Judge issued an injunction, and also decerned against the appellants for R19,861, at which sum he assessed the profits derived by them from infringement. On appeal to the Supreme Court that judgment was affirmed, and, thereafter, the appellants brought the previous judgment of the Appeal Court before that tribunal by way of review, when it was affirmed by a majority, consisting of Lawrie and Withers J.J., Bonser C.J. dissenting. In considering the question raised by the appeal, there were three different apparatus for tea-rolling to which it was necessary to refer. The first was the "Standard" machine which had been used in the Island of Ceylon, without its having been patented, for some time before the date of the respondent's invention; the second was his patent machine known as the "Excelsior"; and the third, the appellants' offending machine, which went by the name of the "Rapid." All those machines had precisely the same object—to prepare the leaves of the tea plant for sale by imparting to them a curl which, before the introduction of machinery, was effected by rubbing the leaves between the palms of the human hand. The mechanism of all three machines consisted of practically the same parts. They might be shortly described as—(1) two plane surfaces (one or both of which might be corrugated between which the leaves were rubbed, technically known as the upper and lower rolling tables; (2) a case or cover, in connexion with the upper table, whose function it was to confine the leaves while they were operated on; (3) arrangements by which the leaves could be fed into the space between the two tables and were discharged after they had been rolled; and (4) a revolving shaft to which the two tables were so geared or connected that, when the machine was at work, they moved in opposite directions, the one above the other, and

rolled or curled the leaves between their surfaces. Neither the "Excelsior" nor the "Rapid" was in any sense a new machine. They were, both of them modifications of the mechanism which was employed in the "Standard" machine, and the only point to be determined in the case was whether the modifications or improvements which constituted the respondent's invention, or a substantial part of them, had been appropriated by the appellants. The novelty and utility of the respondent's modifications or improvements were not challenged. They related to the uppor section of the apparatus, and therefore an inquiry into the infringement of which the respondent complained did not involve any comparison between the parts of his and the appellants' machine other than the upper rolling table, the case which had already been generally described, and the mechanism by which thoso were, more or less directly, connected with each other and with the actuating shaft. In all three machines the upper rolling table and the case rested upon, or were in some manner connected with, a stage or frame work which was directly geared to and actuated by the shaft. In the "Standard" machine, which represented the state of public knowledge in Ceylon at the date of the respondent's patent, the upper rolling table was rigidly connected with the stage or framework which was moved backwards and forwards in a line nearly at right angles to the direction in which the lower table was similarly moved. In one respect the upper mechanism differed materially from the device adopted either by the respondent or by the appellants The case for retaining the leaves during the process of rolling was made to cover the upper table, and was carried along with it by the table when in motion, fresh leaves being introduced through an aperture in the top of the case, which was fitted with a lid. In the respondent's patent machine the case was made open at the top and detached from the upper rolling table, being rigidly connected with the stage of framework. The table was placed incide the case, but not connected with it or with the stage, and, within the case, it was allowed an inch or two of free play all round. Accordingly, when the machine was at work, the upper table did not move until it came into contact with, and was pushed or impelled by, the inner surface of the case. In the appellants' apparatus, a case open at the top was also used, its form being in no material respect different from that of the case which was employed by the respondent in his patent machine. But the appellants' rolling table was not detached, and was not allowed to have free play in any direction. It was rigidly connected with the stage or framework, and was directly actuated by the revolving shaft. It was altogether independent of, and derived no motion or impulse from the surrounding case. The claim made by the respondent in his specification, which the app llants had been held to have infringed, was in these terms:—"The arrangement of transmitting motion to the top rolling surface through tho case or jacket surrounding it, whereby such rolling surface is left free as regards vertical movement from the mechanism operating it." The respondent's patent being not for a new machine, but for improvements upon the mechanism of an old and known machine, his exclusive right could not be permitted to exceed the exact terms of his specification. Assuming that the words "case of jacket," in the claim just quoted, meant the case which their Lordships had already described, it appeared to them to be clear that the appellants' machine did not violate the exclusive privilege of the respondent. No motion was transmitted to the appeallants' rolling table through that case: and the table had not freo play in any direction, although it might be vertically raised or lowered, when requisite, by means of mechanism introduced for that purpose by the appellants. The respondent, therefore, could not succeed in the action unless he could show that, upon a fair construction of his specification, the words "case or jacket" included not only the enveloping case already described, but the whole stage or framework of the upper table directly connected with the shaft. If that were what the respondent really meant his claim would hardly cover the appellants' arrangement, because in it the rolling surface was not in any proper sense, "left free as regards vertical movement from the mechanism operating it." But that the respondent had no such meaning in view was, in their Lordship's opinion, clearly apparent from the terms of the specification taken in connexion with the drawings to which it referred. Their Lordships would therefore humbly advise her Majesty to reverse the judgments appealed from, and to dismiss the respondent's suit with costs in both Courts below. Tho respondent must bear the costs of this appeal.

LIBERIAN COFFEE IN SERDANG—SUMATRA; No. VIII.

(By an ex-Ceylon Planter.)

There are about 1,000 acres of

COFFEE

under cultivation in Upper Serdang, and nearly the same quantity of land is now in course of preparation for planting. There are rumours that the Sultan himself has a mind to plant on his own account: but though I know from his own lips that he is keenly interested in the coffee enterprise, I cannot say whether or not he really intends to turn planter. At present I regret to say that H. H. is seriously indisposed. I am told that he is the most progressive of all the Sultans on the East Coast, and lends a willing ear to any scheme tending to tho advancement of his territory and the welfare of his people. Unfortunately he has recently dropped money heavily over an irrigation scheme for paddy, and in the cultivation of ramie; into both of which he was urged to venture by Europeans. So, consequently and naturally, he is now going ahead cautiously.

All the land here is low-lying: and I do not think there is any coffee growing above 300 ft. elevation. I only know of one estate where shade is being systematically grown. On another estate, cotton trees are planted throughout part of the coffee; but, so far as shade is concerned, this is a farce. There is no doubt in my mind that shade is necessary to Liberian coffee. In case of a long drought the land gets so hard baked and is so burning hot that the coffee receives a severo check which is mitigated by shade trees. The shade should be planted, if possible, a little *before* the coffee. I have known cases where men have been too lato with their shade: and in this connection it should not be lost sight of that whereas you can always remove your shade if you find it superfluous, you cannot at a moment's notice stick in a full-grown shade over 3-year old coffee, should you find your plantation being baked alive.

About

SHADE

again, I have heard it said that it is too much to expect the soil to grow two products at once. But the shade trees give back in their droppings a good deal of valuable manure. We are too apt to forget that weeds and vegetable matter going back into tht soil give back *more* than they have taken out of it. For in addition to restoring what they have taken from the *soil*, they add what they have absorbed from the *atmosphere*, no inconsiderable item. "Of *shades* we can offer a charmin' variety," and I think the Father O'Flynn of them all is Dadap, (*Erythrina E. Indica*). Of this, two sorts are in use, Dadap Solo, and Dadap S'rep, otherwise known as Dadap Java: and in Java I have bought the latter variety from a man at 3 cts. per stick, the same man refusing to let me have his Solo for less than 10 cts. per stick. For my part I think it is six o' one and half a dozen o' t' other: nobbut what I wouldn't take Dadap Solo if it was going at the same price as S'rep. The other shade trees are *Albizzia stipulata*, and *Alb. moluccana*. Of these I have no personal experience; but I am told that the former is preferred, the latter being too brittle and causing much damage to the coffee by the branches falling in windy weather. This sort of accidental damage I believe to be much exaggerated. A tea story will give an example. I was walking with one of my S. Ds. when we came upon half a bush lying across the path. "There's 50 lb. off *this* year's crop,"

grumbled the youngster. "Foot it up, young man," I said handing him my pocket-book. It worked out to 125,000 lb. per acre! I have seen a peppery P. D. in a frightful fume over a trifling accident which could not affect either crop or expenditure by the minutest fraction of an enth: and I believe exaggeration unconsciously finds its way into many of our forecasts. Sure it is that I have known many upright honourable men branded as scamps and liars only because they were led away by a too sanguine temperament.

But let us get back to the coffee. Our mistake in Ceylon has been to bother the bush too much, and not to worry the soil enough. In regard to fruit bearers,

CULTIVATION

means the mamoty far more than the pruning knife: and this is a fact too often ignored or overlooked. By the use of the mamoty, I mean the constant working of the soil: not the indiscriminate shoving in of manure. I have known *Planters* die prematurely from too free use of stimulants. PLANTS also. *N'est ce pas comme cela*, Mr. Editor?

LALANG

is the curse of this part of the world. To dig out "twitch" or "cooch-grass" at home is child's play to working out lalang in Malaya. It is the most pernicious weed that was spread abroad when our first parents were hoofed out of Eden. It means the sweat of your brow; and no error.*

By the way, if it is true that the human form divine has been improving in stature and comeliness generation by generation and century by century since the transformation of the rib, what hideous apparitions Adam and Eve would present to our latter-day eyes. I can only imagine them as Aztec Tom Thumblets without a bath.

It is rather a come-down when you have fancied yourself an Isaiah to be told to take a back seat with Nahum and Habakkuk. But I have to do so. I flattered myself that I was the first to prophesy that a few more years would see the greater part of Upper Serdang under coffee. Rude shock! I am told that years ago a well-known Dikoya planter, now opening land in Province Wellesley and Selangor, told the people here that this was not tobacco, but coffee land: and I have before me a *Deli Courant* of July 1892 containing a long article written by a Frenchman prophesying the future of coffee in this district. I am stronger on "language" than on languages: but a friend has kindly promised to translate the Frenchman's article for you; and you shall have it later on. It is not over accurate, but practical readers will be able to winnow out the chaff. W. TURING MACKENZIE.

COFFEE IN PERU.

It may be of interest to coffee planters in the East to know that Peru, which has for many years produced coffee that has been absorbed by domestic consumption, and has recently appeared as an exporter of coffee, is now likely to be a considerable competitor with other countries. Coffee planting began and coffee is still cultivated near the port of Pacasmayo, with success. But although the cultivation on the coast could be somewhat extended, it must always remain restricted, as there are only certain favoured localities in which the planter can hope for a good return. In other districts its progress is considerable, and production is naturally stimulated under recent quotations.—*L. & C. Express.*

DEAFNESS. An essay describing a really genuine Cure for Deafness, Ringing in Ears, &c., no matter how severe or long-standing, will be sent post free.—Artificial Ear-drums and similar appliances entirely superseded. Address THOMAS KEMPE, VICTORIA CHAMBERS, 19, SOUTHAMPTON BUILDINGS, HOLBORN, LONDON

PLANTING AND PRODUCE.

THE LAW'S DELAY.—At last the judgment of the Judicial Committee of the Privy Council has been given in the well-known tea roller case, and will be found in another column. The verdict is against Mr. Jackson. It is not for us to express an opinion on the merits of a case which has occupied the attention of so many legal luminaries, but we may express sympathy with those concerned. The difficulties which beset inventors and patentees are so many and so perplexing that more than ordinary pluck is required to enable a man to go through with the work. The intricacies of the patent law, the pitfalls into which it is possible for the most careful to stumble, are too many for the ordinary mind, and it will be admitted that the inventor and manufacturer of machinery is well entitled to the profit accruing to his labours when the trouble, risks, and annoyance which attend him are considered. For three or four years this case has dragged on—decisions have been given practically neutralising each other, and now comes the final, from which there is no appeal, and the respondent has to accept the situation and pay the costs. The process of endeavouring to uphold one's view by an appeal to the tedious process of the law courts is work for those who have both patience and philosophy.

COLOMBO COMMERCIAL COMPANY.—In consequence of the judgment in the tea roller action, the directors of the Colombo Commercial Company have decidpd to pay a bonus of five per cent on the ordinary shares.

THE RUSSIAN MARKET FOR TEA.—Referring to the new season's China teas, the *Grocer* says: "Although China teas do not exercise the same sway over the London market that they did years ago, owing to their position having been undermined by the successful introduction and growing popularity of Indian and Ceylon kinds, they nevertheless enjoy a high reputation among Russian consumers, who prefer them to any other teas; and, as is proved by statements from reliable and independent sources, the Muscovite teamen are always prepared to buy the new Monings in large and increasing quantities, at the utmost market value, regularly as the seasons come round. Not only is this the case at the beginning of the season, when the excitement of selecting and buying the teas is at its highest, but afterwards and all the year through, so long as they have orders to execute; and purchases, begun at Hankow in the spring, often go on and are completed in London during the following autumn and winter. These subsequent dealings in the article take the shape of exports of tea from this port to Russia; and as evidence of the preference that is given to China growths over all other sorts by foreign countries, it may be mentioned that, as officially returned, the shipments of China leaf from hence to the Continent and elsewhere during the first four months of the present year amounted to 5,715,429lb. out of a grand total of 9,330,040 lb. Ceylon &c., to all other places not specified. Whilst black-leaf teas are taken off our market by Russian purchasers when they run short, the red-leaf or Foochow descriptions are shipped indirectly to Canada, Germany, and other quarters of the globe, and the inquiries from shippers here, as a rule, contribute a deal of support to the market for China tea when the home trade are disinclined to operate."

THE OLD STORY RETOLD.—There are, however, times when common congou, ruling abnormally cheap, and pence per pound under the rates current for low-priced Indian and Ceylon teas, attracts the attention of the wholesale dealers, blenders, and purveyors of packet teas, and then considerable parcels change hands at relatively higher prices. The reason for this transference of demand, the writer in the *Grocer* goes on to say, it rendered abundantly clear by the fact that China tea for the purposes of blending or holding over keeps its strength and flavour much better and longer than either Indian or Ceylon kinds, and and on that account some persons buy enough of their favourite sort to last them all the year. Thus it is that new China teas bought on the easy terms now prevailing are almost sure to be worth as much, if not more, in six or eight months'

time as they are at the moment; whereas in former seasons it was an ugly feature of the trade, especially when prices on the average were ruling comparatively high, for dear-bought teas to visibly depreciate in value sooner than could have been imagined by the merchants or dealers. Besides the proportion of common China teas that are wanted on certain occasions to comply with the standard of cheapness as fixed by the modern tenpenny and shilling canister, there are likewise the requirements of purchasers—to the tune of many millions of pounds—to be satisfied who make a speciality of fancy sorts, such as capers, green, gunpowder, and scented teas, which are most in request in the north of England. where the taste for these showy, delicate and choice qualities is stronger than in the southern countries; and instead of the leading firms getting the biggest profits out of superior Indian and Ceylon teas, as they did when they were first offered and were the rage with the country consumers, who paid something extra for the novelty of them, the conditions have since been entirely reversed, and a handsome premium is not now infrequently obtained on China teas of rare excellence of make, cure of leaf and richness of bouquet.

ANOTHER LARGE TEA DEALING COMPANY.—We may think what we like about the good old times of tea dealing, but even in these days there is some profit attached to the handling of tea. Another large firm of dealers has converted its business into a joint stock concern. Although in this instance the profits of the business are not entirely derivable from tea, the leaf has played an important part in building up the fortunes of the firm. The International Tea Company's Stores, Limited, which has been formed, acquires the business of wholesale tea, provision, and food produce importers carried on by Messrs. Kearley and Tonge, of Mitre Square Aldgate, together with their retail distributing business, comprising upwards of 200 tea and general produce stores established by them in various parts of the country, under the name of the "International Tea Company." The capital is £900,000 divided into 80,000 6 per cent. Cumulative Preference shares of £5 each, and 500,000 Ordinary shares of £1 each. The vendors Messrs. Kearley and Tonge have agreed to act as managing directors for a term of years for a remuneration of 5 per cent. on the profits after payment of the Preference dividends. The profits for the three and a half years to October 27, 1894, are stated as follows:—April 18, 1891, to April 30, 1892, £33,577; May 1, 1892, to October 29, 1892 £30,663; October 30, 1892, to October 28, 1893, £52,096; October 29, 1893, to October 27, 1894, £66,148. The purchase price is £900,000, of which £500,000 is taken in Ordinary shares, £100,000 in Preference shares, and £300,000 in cash.—*H. and C. Mail*, May 24.

COFFEE, CINCHONA, TEA IN JAVA.

Acting-Consul MacLachlan writes as follows under date, March 8th, on the Trade, Commerce, and General Matters relating to the Island of Java for the year 1894:—

COFFEE.—The total production from private and Government lands has been 50,500 tons as against 18,700 tons in 1893. Provided that atmospheric conditions are favourable, an increased quantity from private estates may be looked for in future, as fresh land is being continually opened up in the east end of the island, the crops from which are now coming, for the first time, on the market.

The Cultivation of the Liberian bean, both in Mid and West Java, is rapidly increasing, and the satisfactory results obtained from its introduction become year by year more apparent as the principal difficulties attending the preparation of this coffee for the market are gradually being successfully surmounted. As a result a marked improvement in the appearance and quality of the coffee is noted, and its favour is becoming more and more assured.

The continued recurrences of the so-called "leaf" disease in the Java coffee on low-lying lands, from which the Liberia still preserves comparative, though by no means entire immunity, causes more confidence to be felt in the latter, and many lands which have suffered most severely from the ravages of this disease in the Arabian plant are being re-planted with Liberia.

On May 3rd it was decided to give up the Government cultivation of coffee in the Krawang residency, and on January 1st, 1895, the law rendering the delivery in that district to Government obligatory was repealed.

TEA.—Exports of tea show a small falling off as compared with those of the preceding year, being 8,735,000 lb., as against 8,792,000 lb. Prices which had ruled pretty low during the year, showed some improvement towards its close.

CINCHONA BARK shows an increased export over the previous year of 1,458,000 lb. from private, and of 146,000 lb. from Government lands. Prices, already at a low level, have further declined in face of the enormous supplies.—*L. & C. Express*, May 24.

NOTES FROM OUR LONDON LETTER.

LONDON, May 2.

It was mentioned in a late letter of mine to you that I had heard it reported that before last leaving Ceylon

MR H. K. RUTHERFORD

had instructed the managers of estates in which he was interested

TO STOP ALL MANURING.

We were much surprised to hear this, because it had always been understood that Mr. Rutherford had been almost the earliest pioneer in tea manuring on his far-famed estate Mariawatte. I know Mr. John Hughes told me, now several years back, that he had been concerned with the supply of manure for that estate, and it had always been understood that very good results had followed their application. We naturally, therefore, attach much importance to Mr. Rutherford's experienced opinion. In answer to a question addressed to that gentleman by me, he has obligingly written me to the following effect:—

"Although it is an undoubted fact that the yield of tea can be very materially increased by manuring, still there is also a very great risk of bringing in some disease to the roots of the tea bush by the use of artificial manure. We consider it the wiser policy at present to circumscribe our manuring to the experimental stage, and carefully watch results before launching out on a large scale in this direction."

No doubt it must be wise to proceed in the matter of manuring with caution, and from all I hear it would seem to be advisable to have some advisory officer in the Island capable of deciding what localities and soils would benefit by the application, and what had better be left without it. I have learned that here at home the large farmers never make a change of practice without expert opinion first being sought. Every case seems to need special consideration. Thus manure applied to lands bordering the estuary of the Thames, that nearly all lie below high tide level, would simply be ruined were manure applied to them. These get their nourishment, apparently, largely from percolation from the river. To apply manure therefore to lands so situated is to supersaturate them, and to produce the same evils as are apparent in the case of many sewage farms. Speaking on this subject with an old and experienced coffee planter this week, he concurred with Mr. Rutherford as to the necessity for

proceeding with great caution. He instanced to me a coffee estate of his own on some 50 acres of which he had lavishly applied manure. The berries upon the trees were simply wonderful to see, but not one came to maturity, and the trees were completely killed! It seems to me that with regard to tea manuring you require a resident expert. I believe that such a man, although perhaps it would be wise to have him officially selected, need not be a salaried official. The private practice he would be sure to obtain would probably make his employment in the island exceedingly lucrative. Of course in Mr. John Hughes your planters have a most competent adviser, but I hardly think he can do all that could be done by a man on the spot.

ROYAL BOTANIC GARDENS, TRINIDAD.

We have received a copy of Annual Report for the year 1894, by J. H. Hart, F.L.S., C.M.P.S., F.M.S.L., Superintendent, and quote three paragraphs of special local interest:—

CACAO.—The varieties of Cacao obtained from Nicaragua in 1893 are doing fairly well with the exception of Theobroma bicolor which appears to be particularly tender in the Gardens. Plants of the old Ceylon Red obtained for comparison with our varieties are growing vigorously. In December Baron Eggers, a Danish Botanist, who has interested himself largely in economic Botany, visited the Gardens. He was accompanied by Senor Seminario from Ecuador who is largely interested in Cacao in that country. I learnt from him that they have several varieties under cultivation which are not present in Trinidad, and I have made arrangements to obtain these with a view to comparing their quality with our own produce. It should be remembered that Trinidad depends for the major portion of her crop upon the introduced variety known as Forastero or Foreign Cacao, and it is quite possible that other introduced varieties will thrive as well as the Forastero, and, it may be better, and that "new blood" will be of the greatest service. It is stated that in Ecuador the Cacao tree grows naturally, attains a large size and cultivation is of the most primitive character, the crop being taken practically from real Cacao Forests. If such is the case there must be an amount of vital energy in the trees which our varieties do not possess, and it becomes desirable in the interests of our planters to test the value of the varieties cultivated. A special variety mentioned, is known as "Esmeralda" which I am informed is thin-skinned, and of fine quality.

COFFEE.—The demand for Coffee plants has not been large this year, and so far as I am aware, no systematic planting has been started.

Our seedlings in the Nurseries have suffered from the disease known as *Cercospora coffeicola*, a leaf fungus. This is not the leaf fungus of Ceylon, and is probably not to be regarded in a very serious light, for although it does considerable damage to young seedlings, it has not been found to injure fruiting trees to any appreciable extent. We have fruiting trees the picture of health with scarcely a leaf injured, while close beside these, are nursery beds where the fungus has done considerable damage. It thus appears that once the plant gets beyond the seedling stage it is practically safe from attack.

COLA. *Sterculia acuminata*.—Among the plants to which especial attention has bbeen directed during the past year has been *Sterculia acuminata*, or the "Cola Nut," and a "Circular Note" was issued calling attention to the advancing price of the marketable article. The Cola tree thrives well in Trinidad, as it simply requires the same conditions and soil as suit its "first cousin" the Cacao tree. There cannot be a doubt that Trinidad can in a ew very fyears put a large quantity of this article upon the market, if prices continue to rule high enough to make it remunerative to the grower. Produce sent home during the past year from the Botanical Department was valued at 1/3 per lb., and on this becoming known, many urgent enquiries for plants were received at this office, the greater proportion of which we were able to supply, and we are now making provision for a large increase. Eighty of our nuts make a pound when dry. and one of our trees produced last year nuts to the number of 990 or over 12 lbs. of dry produce, this at 1/3 per lb. gives 15/ per tree. The tree bearing this quantity of nuts is not larger than the average size Cacao tree of Trinidad. but is somewhat taller, and has received no special culture whatever. The nuts fall when ripe, when they should be at once collected, peeled and placed in the sun to dry, no fermentation being necessary. When they have become partially dry the outer skin of the "nut" or seed should be removed, and the cotyledons divided. When this stage is reached the drying process should proceed as rapidly as possible, and when the nuts have become hard and brittle, they are fit for market.

PLANTATION TOOL PROSPECTS IN CEYLON.

The makers of cultivating tools and plantation implements for Indian use should be advantaged by the large development which has of late attended the raising of the coconut in Ceylon. Plantation devoted to its growth appear to be in a thriving and prosperous condition. The prices (in silver) of this fruit has gone up, it is said, beyond the most sanguine expectations of those interested, and as a result the cultivation of the nut is extending rapidly. Capitalists are investing their money in coconut plantations with the greatest confidence, and the acreage of the new lands that will be opened during the ensuing planting season will be much over what it has been in previous years. The question that suggests itself is whether the present prices will keep up, or, if they should come down, how far it may appreciably affect the industry. No other plantation product, whether native or English, rice or tea, could stand just at present a fifty per cent reduction, but "it can be safely said that coconuts could survive even a much greater reduction. The price may drop through overproduction. But such an eventuality as this is not likely to occur for, perhaps, ten years, or till all the young plantations in existence come into bearing. Values may fall through a waning of the demand, but it is stated that there is no immediate likelihood of any other growth replacing coconut, even partially. In fact, the field for coconut products is daily extending. It is admitted that the fall of exchange has not been without influence in promoting this industry. Yet none the less is the intelligence we are able to communicate matter for much satisfaction to the cultivating and plantation tool-making industry.—*Implement and Machinery Review.*

IN SELANGOR, 1,026 acres of customary land have been taken up for the avowed purpose of planting Liberian coffee. Of these 500 acres have been given out during the past year. All coffee estates with two exceptions have begun to shew crops, the older trees on Weld's Hill yielding as much as 10 pikuls to the acre.—*Pinang Gazette.*

SMOKERS SHOULD USE

CALVERT'S DENTO-PHENOLENE,

A FRAGRANT LIQUID DENTIFRICE AND MOUTH-WASH.

Editor of *Health* says:—"The most effective preparation for ridding the mouth of the aroma of tobacco, and leaving a pleasant taste."

Sold in 1s. 6*d*., 2*s*. 6*d*., and 1 lb. 7*s*. 6*d*. bottles, by Chemists, &c.

F. C. CALVERT & CO., MANCHESTER.

COLOMBO PRICE CURRENT.

(Furnished by the Chamber of Commerce).

Colombo, June 24, 1895.

EXCHANGE ON LONDON.—*Bank Selling Rates*:—On demand 1/1⅛; 4 months' sight 1/1 3-16; 6 months' sight 1/1 7-32. *Bank Buying Rates*:—Credits 3 months' sight 1/1 7-32 to ¼; 6 months' sight 1/1 9-32 to 5-16; Documents 3 months' sight 1/1¼ to 9-32; 6 months' sight 1/1 5-16 to 11-32.—Closing rates.

COFFEE.—Plantation Estate Parchment on the spot per bushel, R16·00 to R17·00.

Estate Crops in Parchment, delivery to per bushel,—No quotations.

Plantation Estate Coffee, f.o.b. on the spot per cwt, R80·00 to R87·00.

Plantation Estate Coffee f.o.b. Special Assortment per cwt,—No quotations.

Liberian parchment on the spot per bushel, R12·00 to R12·50.

Garden and Chetty Parchment on the spot per bushel, R14·50 to R16·00.

Garden and Chetty Coffee f.o.b. per cwt,—No quotations.

Native Coffee f.o.b. per cwt, R70·00 to R71·00.

TEA.—Average Prices ruling during the week: Broken Pekoe, per lb 59c. Pekoe per lb 50c. Pekoe Souchong, per lb 41c. Broken mixed and Dust, per lb 30c.—Averages of Wednesday's sale.

CINCHONA BARK.—Per unit of Sulphate of Quinine per lb 01½c. to 3c.—1 to 4 %.

Twigs and Branch.—No quotations.

CARDAMOMS.—per lb 80c. to R1·90.

COCONUT OIL.—Mill oil per cwt, R16·12 to R16·25.

Dealer's oil per cwt, R16·00 to R16·12.

Coconut oil in ordinary packages f.o.b. per ton R355·00 to R356·25.—Nominal.

COCOA.—(Unpicked and undried) per cwt, R30 to R40.—Nominal.

COPRA.—Per candy of 560 lb R12·00 to R49·00.

COCONUT CAKE.—(Poonac) f.o.b. per ton, R55 to R65.

COIR YARN.—Nos. 1 to 8 per cwt, R6·00 to R15·00.

CINNAMON.—Nos. 1 and 2 only per lb 60c.

CINNAMON.—Ordinary Assortment, per lb 56c.

PLUMBAGO.—Large Lumps per ton, R150 to R330.

Do Ordinary Lumps per ton, R130 to R290.

Do Chips per ton, R80 to R150.

Do Dust per ton, R30 to R100.

EBONY.—Per ton.—Govt. sales postponed.

RICE.—Soolye per bag, R6·85 to R7·80.

Pegu and Calcutta Calunda per bag R7·90 to R7·60.

Coast Calunda per bushel, R2·95 to R3·25.

Muttusamba per bushel, R3·20 to R3·50.

Kadappa and Kuruwe per bushel,—No quotations.

Rangoon Raw 3 bushel, bag, R10·25.

FREIGHTS.

Cargo.	Per ton London per str.	N. York per str.	Trieste per str.	Mar'lles per str.	Hamb', Bremen &c.
	s. d.	s. d.	s. d.	R. c.	s. d.
Tea	25/	..	25/	25/	25/
Coconut Oil	25/	..	25/	25/	25/
Plumbago	22/6	..	25/	25/	25/
Coconuts in bags	25/	..	25/	25/	25/
Other Cargo	25/	..	25/	25/	25/
Broken Stowage	12/6	..	..	..	..
SAILERS.					
Coconut Oil	..	35/	..	..	
Plumbago	..	35/	..	..	..

New York rates per steamer with transhipment 12/6 @ 15/ above London rates.

LOCAL MARKET.

By Mr. A. M. Chittambalam, 7, Baillie St., Fort.

Colombo, June 25th, 1895.

Garden Parchment :—	R15·50 to 16·00 per bushel.
Chetty do :—	16·00 to 16·50 do
Native Coffee :—	62·00 to 63·00 per cwt.
do f.o.b. :—	70·00
Liberian Parchment,	13·00 per bushel (nominal).
do Coffee,	63·00 per cwt.
CARDAMOMS.—	0·70 to 2·00 per lb. (nominal).
COCOA.—(nominal)	22·00 to 35·00 per cwt. do
RICE.—Market is dull :—	
Kazla	R6·40 to 6·50 per bag.
Soolye	6·75 to 7·00 do
Callunda	6·85 to 7·00
Coast Callunda	2·75 to 2·90 per bushel.
Kurnve (Scarce)	
Muttusamba	3·15 to 3·40 do

CINNAMON.—Quoted Nos. 1 to 4, at 51c and Nos. 1 and 2 54 cents per lb. (nominal).

CHIPS.—R55·00 per candy (nominal).

COCONUTS.—Ordinary	R35·00 to 38·00	per 1,000 (nominal).
do Selected	42·00 to 45·00	do do
COCONUT OIL.—	16·12 to 16·25	per cwt. do
COPRA.—Market steady:—		
Kalpitiya	R49·00 to 49·50	per candy.
Marawila	48·00 to 48·50	do
Cart Copra	44·00 to 47·00	do
POONAC.—Gingelly	97·50 to 105	per ton.
Chekku	70·00 to 75·00	do
Mill (retail)	60·00 to 62·50	do
EBONY.—quotations at	R100 to R185	(nominal).
SATINWOOD.—cubic feet	1·50 to 2·12	do
HALMILLA.— do	1·00 to 1·25	do
KITUL FIBRE.—Quoted at	R30·00	per cwt. (nominal).
PALMYRA FIBRE.—Quoted nominally :—No buyers.		
Jaffna Black.—Cleaned	R16·00 to 20·00	per cwt.
do Mixed	13·00 to 15·00	do
Indian do	8·00 to 10·00	do
Do Cleaned	12·00 to 15·00	
SAPAN WOOD.—Quoted.	55·00 to 60·00	per ton.
KEROSINE OIL—American	7·00 to 7·12	Per case.
do Russian	2·85 to 2·90	Per tin.
KAPOK.—Cleaned f. o.b :—	25·00 to 27·50	(nominal.)
do Uncleaned	5·00 to 5·50	do
Croton Seed	13·00 to 17 00	do
Nux, Vomica	2·50 to 3·00	per cwt.

CEYLON EXPORTS AND DISTRIBUTION 1895.

COUNTRIES.	Coffee cwt. Plan-tation	Coffee cwt. N'tive	Coffee cwt. Total.	Cinchona. 1895 B'nch & Trunk lb	Tea 1895 lb.	Cocoa cwt.	C'moms lb.	Cinnamon. Bales lb.	Cinnamon. Chips lb.	Coconut Oil. 1895 cwt.	Coconut Oil. 1894 cwt.	P'bgo. 1895 cwt.
To United Kingdom	24140	36	24176	345087	41732599	15995	127318	377576	185526	59685	86089	46097
,, Austria	1895	100	1995	..	1970	100	..	1000	5600	7655	6925	..
,, Belgium	24	..	24	78484	4206	542	..	25500	16500	2700	6943	6216
,, France	614	509	1123	7900	24036	298	..	3500	2800	..	483	228
,, Germany	445	..	445	..	125243	344	33386	114815	121072	9408	15803	20586
,, Holland	..	..	..	20474	6735	..	..	..	..	..	..	3587
,, Italy		..	..	19067	3873	50	..	25000	40880	401	2925	..
,, Russia	1313	..	1313	..	136196	..	..	..	..	..	..	..
,, Spain	.	..	..	..	15725	45	..	71500	1120	..	..	..
,, Sweden	..	..	..	..	..	..	..	..	..	..	..	..
,, Turkey	..	..	..	..	5517	..	..	..	..	..	..	..
,, India	442	872	1314	..	392348	2	39181	1100	50	1036	18279	309
,, Australia	3486	581	4067	..	4474519	52	112	1800	6536	1196	924	501
,, America	476	..	476	..	197019	741	5772	20000	11200	55506	36286	49410
,, Africa	..	..	..	..	58968	..	..	..	..	..	..	..
,, China	79	..	79	..	123907	33	..	12600	..	165	1579	..
,, Singapore	1	..	1	..	14754	..	..	..	..	4991	2884	..
,, Mauritius	261	137	398	224	71799	..	..	..	..	..	..	..
,, Malta	..	..	..	..	22795	..	..	..	..	..	..	..
Total exports from 1st Jan. to 24th June 1895	33176	2235	35411	471236	47412209	18202	205769	654391	391284	142743		126934
do 1894	11703	420	12123	1001846	42547104	10150	162423	557920	265293	179120		121690
do 1893	30090	1620	31710	2371623	41021543	20293	202111	596496	278732	136450		192737
do 1892	23484	1384	24868	3175137	39409613	12294	195018	737461	263644	240401		209414

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From S. Figgis & Co.'s Fortnightly Price Current, London, 5th June 1895).

EAST INDIA. Bombay, Ceylon, Madras Coast and Zanzibar.	QUALITY.	QUOTATION
ALOES, Socotrine	Good and fine dry liver...	£3 10s a £5
Zanzibar & Hepatic	Common and good ...	30s a 80s
BARK, CINCHONA Crown	Renewed	2d a $4\frac{1}{2}$d
	Original stem	$1\frac{1}{4}$d a 3d
Red ...	Renewed	1d a 4d
	Original stem	$\frac{3}{4}$d a 2d
Bees' Wax White	Sli. sof. to gd. hard brig.	£7 10s a £8
Yellow ...	Dark to fair	£6 a £7
Mauritius & Madagascar ...	Fair to fine	£6 15s a £7 10s
CARDAMOMS—		
Allepee	Fair to fine clipped ..	1s a 2s 6d
Mangalore	Bold, bright, fair to fine...	1s 10d a 2s 8d
Malabar	Clipped, bold, bright fine	1s 3d a 2s 3d
Ceylon. Malabar sort	Middling, stalky & lean	1s 3d a 1s 6d
	,, ,, medium ,,	1s 5d a 1s 10d
	,, ,, small	1s a 1s 4d
	Small to bold brown ...	1s a 1s 6d
Alleppee and	Fair to fine bold ...	2s 2d a 3s 3d
Mysore sort	,, ,, fine pmp. cl pl.	1s 9d a 3s 6d
	,, ,, small ...	1s 2d a 1s 5d
Long Ceylon...	Shelly to good	1s 1d a 2s 11d
CASTOR OIL, 1sts	White	$2\frac{7}{8}$d a 3d
2nds	Fair and good pale ...	$2\frac{1}{4}$d a $2\frac{1}{2}$d
CHILLIES, Zanzibar ...	Fair to fine bright ..	27s a 30s
	Ord'y. and middling ...	24s a 27s
CINNAMON, 1sts	Ord'y. to fine quill ...	$8\frac{1}{2}$d a 1s 4d
2nds	,, ,, ,, ,, ...	$8\frac{1}{2}$d a 1s 3d
3rds	,, ,, ,, ,, ...	$7\frac{1}{2}$d a 1s
4ths & 5ths	Woody and hard ..	7d a 9d
Chips	Good ordinary ...	$2\frac{7}{8}$d
CLOVES, Zanzibar and Pemba.	Fair to fine bright ...	3d a $3\frac{1}{2}$d
	Common dull and mixed	$2\frac{3}{4}$d a 3d
,, STEMS	Common to good ...	1d
COCULUS INDICUS ...	Fair sifted	1?s a 15s
COFFEE	Midding to fine mid ...	101s a ?07s
	Low mid and low grown	93s a 100s
COLOMBO ROOT... ...	Good to fine bright sound	10s a 20s
	Ordinary & middling ...	7s a 8s
CROTON SEEDS, sifted...	Ordinary to fine fresh ...	23s a 31s
CUTCH	Fair to fine dry ...	20s a 32s
DRAGONS BLOOD, Zan.	Ordinary to good drop ...	2?s a 50s
GALLS, Bussorah & Turkey	Fair to fine dark blue ...	47s a 50s
	Good white and green ..	40s a 42s 6d
GINGER, Calicut, Cut A,	Good to fine bold ..	70s a 80s
B & C	Small and medium ..	53s a 68s
Cochin Rough...	Common to fine bold ...	35s a 38s
,, ...	Small and D's ...	31s a 31s 6d
Bengal Rough,	Fair to good ...	22s 6d a 25s
GUM AMMONIACUM ...	Blocky to fine clean ...	20s a 50s
ANIMI, washed ...	Picked fine pale in sorts	£9 a £11 10s
	Part yellow & mixed do.	£8 10s a £8 15s
	Bean & Pea size ditto ..	£4 a £7 10s
	Amber and red bold	£5 a £7
scraped...	Medium & bold sorts ..	£4 a £7
ARABIC E.I. & Aden...	Good to fine pale frosted sifted	40s a 45s
	Sorts, dull red to fair ...	30s a 37s 6d
Ghatti ...	Good to fine pale selected	32s 6d a 50s
	Sorts middling to good	23s a 30s
Amrad cha	Good and fine pale ...	35s a 45s
	Reddish to pale brown ...	25s a 32s
Madras ...	Dark to fine pale ...	20s a 35s
ASSAFŒTIDA	Fair to fine pinky block... and drop	60s a 105s
	Ordinary stony to midlin	30s a 50s
KINO	Fair to fine bright ..	£25 a £30
MYRRH, picked	Fair to fine pale ...	£5 a £7
Aden sorts	Middling to good ...	65s a 75s
OLIBANUM, drop...	Fair to fine white ...	30s a 55s
	Reddish to middling ...	17s a 25s
,, pickings...	Middling to good pale ...	8s a 14s
siftings	Slightly foul to fine ..	9s a 13s
INDIARUBBER	Red hard clean ball ...	2s 1d a 2s 5d
East African Ports, Zanzibar and Mozambique Coast	White softish ditto ...	1s 8d a 2s 2d
	Unripe root	10d a 1s 4d
	Liver and Lamu Ball ...	1s 8d a 2s $2\frac{1}{2}$d
	Sausage, ordinary to fine	1s 3d a 2s
	,, without sticks	2s 2d a 2s 5d
Assam, ...	Good to fine ...	1s 7d a 2s
	Common foul & middling	9d a 1s 5d
Rangoon	Fair to good clean ...	1s 6d a 2s 2d
Madagascar, Tamatave, Majunga and Nossibe	Good to fine pinky & white	2s 1d a 2s 5d
	Fair to good black ...	1s 6d a 1s 9d
ISINGLASS or FISH MAWS Tongue.	good to fine pale ...	1s 8d a 2s 6d
	dark to fair ...	9d a 1s 4d
Bladder Pipe	Clean thin to fine bold...	1s 6d a 2s 4d
Purse ...	Dark mixed to fine pale...	1d a 1s 2d

EAST INDIA Continued. East Coast Africa, Malabar and Madras Coast, Bengal.	QUALITY.	QUOTATIONS.
Kurrachee Leaf ...	Good and fine pale	2s 1d a 2s 9d
	Red part thin ..	1s 2d a 1s 9d
INDIGO Bengal	Middling to fine violet...	4s 6d a 5s 6d
	Ordinary to middling ...	3s 2d a 4s 3d
Kurpah	Fair to good reddish violet	2s 8d a 3s 6d
	Ordinary and middling	1s 9d a 2s 6d
Madras (Dry Leaf)	Middling to good ...	1s 8d a 2s 10d
	Low to ordinary ...	7d a 1s 6d
IVORY—Elephants' Teeth		
60 lb & upwards ...	Soft sound	£5? a £6?
over 30 & under 60 lb	,, ,,	£48 10s a £61
60 a 100 lb. ...	Hard ,, ,,	£35 a £43
Scrivelloes	Soft ,, close & wide	£2? a £35 10s
Billiard Ball Pieces $2\frac{3}{8}$ a $3\frac{1}{4}$ in	Sound soft	£30 a £97
Bagatelle Points ...	Sli. def. to fine sound soft	£51 a £83
Cut Points for Balls ...	Shaky to fine solid sl. sft	£65 a £78
Mixed Points & Tips...	Defective, part hard ..	£33 a £44
Cut Hollows	Thin to thick to sl. sft	£25 a £41
Sea Horse Teeth — ... $\frac{3}{4}$ a $1\frac{1}{4}$ lb.	Straight corkd part close	1s a 3s 6d
MYRABOLANES, Bombay	Bhimlies I, good & fine pale	7s 9d
	,, II, fair pickings	3s 6d a 4s 3d
	Jubblepore I, good & fine pale	5s a 7s
	,, II, fair rejections	1s 6d a 4s 6d
	Vingorlas, good and fine	1s a 5s 6d
Madras, Upper Godavery	Good to fine picked ...	5s 6d a 6s 6d
,, ,, ..	Common to middling ...	3s 3d a 4s 6d
Coast	Fair	4s 4d a 4s 6d
Pickings ...	Burnt and defective .	?s 3d a 4s
MACE, Bombay ...	Dark to good bold pale ..	1s 6d a 2s
	W'd com. dark to fine bold	4d a 6d
NUTMEGS, ,, ...	65's a 81's	1s 11d a 2s 10d
	90's a 125's	1s 3d a 1s 10d
NUX VOMICA	Fair to good bold fresh	6s a 9s
OIL, CINNAMON ...	Good heavy .. .	$3\frac{1}{2}$d a 1s 6d
CITRONELLE ...	Bright & good flavour...	$\frac{7}{8}$d a 1d
LEMONGRASS ...	,, ,, ,, ...	? s 15s
ORCHELLA WEED Ceylon ...	Mid. to fine, not woolly	11s a 15s
Zanzibar	Picked clean flat leaf ..	12s a 18s
Mozambique	,, wiry	22s a 32s
PEPPER—		
Malabar, Black sifted ...	Fair to bold heavy .	$2\frac{3}{4}$d a $2\frac{1}{2}$d
Alleppee & Cochin ..	,, good ,, ...	
Tellicherry, Black ...	,, ,, .	
PLUMBAGO, Lump ...	Fair to fine bright bold	15s a 18s
	Middling to good small	10s a 13s
Chips ...	Dull to fine bright	1s 6s a 8s 6d
Dust ...	Ordinary to fine bright...	2s a 6s
RED WOOD	Fair and fine bold ...	£3 10s a £4
SAFFLOWER, Bengal	Good to fine pinky nominal	95s a 100s
	Ordinary to fair ...	70s a 80s
	Inferior and pickings ...	30s a 50s
SANDAL WOOD, Logs .	Fair to good flavour ...	£30 a £50
,, ,, Chips..	Inferior to fine ..	£4 a £8
SEEDLAC	Ordinary to fine bright	30s a 90s
SENNA, Tinnevelly ...	Good to fine bold green	6d a 8d
	Fair middling medium	3d a $5\frac{1}{2}$d
	Common dark and small	$\frac{1}{2}$d a 2d
Bombay ...	Ordinary to good ...	1d a 2d
SHELLS, M.-o'-P. ...	EGYPTIAN—bold clean ..	50s a 55s
	medium thin and stout	70s a 77s 6d
	chicken, part oysters	?s 6d a 77s 6d
large	BOMBAY—poor to fine thin	57s 6d a 62s 6d
medium part stout	clean part good color	75s a 90s
chicken part stout	,, ,, ,,	35s a 90s
oyster & broken pcs	,, ,, ,,	77s 6d a 82s 6d
Mussel	medium and bold sorts	40s a 50s
	small and medium sorts	15s a 34s
Lingah Ceylon ..	Thin and good stout sorts	9s a 20s
TAMARINDS	Mid. to fine black not stony	9s a 11s
	Stony and inferior ...	1s a 6s
TORTOISE-SHELL ...	Sorts, good mottle, heavy	23s a 38s
Zanzibar and Bombay	Pickings thin to heavy ..	9s 6d a 21s 6d
TURMERIC, Bengal ...	Leanish to fine plump finger ...	9s 6d a 11s 6d
Madras ...	Fin. fair to fine bold brgt	11s a 13s
,, ...	Mixed middling	10s a 11s
,, ...	Bulbs	8s a 9s
Cochin ...	Finger	8s a 11s
VANILLOES,		
Bourbon, 1sts ...	Fine, cryst'ed 5 to 9 in.	18s a 25s
Mauritius, 2nds...	Foxy & reddish 5 to 8 in.	2s a 18s
Seychelles, 3rds ..	Lean & dry to mid. under 6 in. ...	7s a 10s
Madagascar, 4ths...	Low, foxy, inferior and pickings	5s a 7s 6d

THE

AGRICULTURAL MAGAZINE,

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for July :—

Vol. VII.] JULY, 1895. [No. 1.

PICKLING OF SEED.

THE treatment of seed before planting is not altogether unknown to the natives of Ceylon, but it is doubtful whether the efficacy of pickling or steeping is fully recognised by them. A very common practice among our gardeners is to mix their seeds (those of chillies, brinjals, cucumber for instance) with ashes, but as far as we know the objects with which this is done is to prevent insects from attacking the seeds before they are planted, to keep them tolerably dry and prevent them from becoming mouldy. Again, natives often hang up parcels of seeds that are intended for planting, 'in the smoke,' that is, above their fire places so as to allow the seeds to be well smoked—the objects in this case being the same as before. Now the latter practice will no doubt also preserve the seeds to some extent from insect-attack after they are planted, but we doubt if this effect is recognised by those who adopt the practice.

We have heard of one or two cases where paddy and other seeds are soaked in a solution of urine, in order to prevent the seeds being destroyed by insects as well as to hasten germination and nourish the young plant at the start; but this is not a common practice. In English text-books on agriculture, we generally read of pickling cereal seeds in bluestone solution as a remedy for the fungoid diseases known as "smut" and "bunt." Dr. Fream in his text-book says:—"A solution of $1\frac{1}{2}$ lb. of sulphate of copper in 2 gallons of water with suffice for one quarter of corn."

Town and Country thus refers to the pickling of corn seed:—"A solution of sulphate of copper (bluestone) is used for pickling seed wheat, as a remedy for smut. The strength of the solution generally used is 1 lb. of bluestone to 4 gal. of water, and some kinds of wheat are treated with a weaker solution, say 1 lb. of bluestone to 5 gal. of water. Supposing you have to use 7 lb. of bluestone, dissolve it in 5 gal. of hot water, and then bring the solution up to 28 gal. with cold water. This solution is put in a tub of convenient size, and the wheat dipped in it. For dipping purposes the seed may be put in wicker baskets, perforated kerosene tins, or thin bags such as bran bags. The solution penetrates every part of the wheat in a few seconds, when the grain is lifted out and allowed to drip for a short time. The wheat is then ready for immediate sowing, or it may be kept for a few days before planting. See that the bluestone you use is pure. Buy it from some reputable house, because it is sometimes largely adulterated with sulphate of iron. It is said that dipping the seed for five minutes in water of the temperature of 127 deg. Fah. kills the spores of smut."

We find the following in our notes of Prof. Wallace's University lectures:—"There are three kinds of pickles or steeps in use: alkaline, metallic and neutral. Urine, sulphate of soda and lime are alkaline steeps, and do pretty well, the action

being the formation of a soapy material with the sticky part of the spores of fungi. Of metallic steeps, copper sulphate, sulphate of iron and arsenic are the best—sulphate of copper being the most effective, as it destroys the spores at once. After treatment with bluestone, 1 lb. of archangel tar, made thin by hot water, may be added to each sack (4 bushels) of grain to prevent birds taking the seed. The seed is then dried with ashes or lime. Some think that this dressing prevents absorption of water by the seed, but if this were true it prevents the absorption of too much water in wet weather."

Neutral steeps such as common salt Prof. Wallace thinks useless, and of nitrate of potash (nitre) and nitrate of soda he expresses a similar opinion. The application of salt to coconut holes in planting nuts is no doubt a modification of the pickling process, and though Prof. Wallace (referring to fungoid attack) considers salt of no avail, there are many in Ceylon who place great reliance on the action of salt in preventing the attacks of white-ants and other insects. (Query—How would the process of *steeping* nuts in a saline solution before planting do?) Dr. Nicholls in his book on *Tropical Agriculture* mentions that crude salt or seawater may be sparingly applied to coconut trees, and further states that "when coconut palms are cultivated inland, and they do not thrive, an application of salt or seawater has often been found to make them grow vigourously and bear fruit." Dr. Nicholls is here referring to his West Indian experience. The effect of the nitrates of potash and soda as soluble nitrogenous manures would be to force the plant into vigorous growth in the early stages, when it is most liable to be attacked by pests.

An Indian agricultural officer of high standing, writing to us on the subject of treatment of seeds, says: "I pickle all kinds of seed before sowing, even potato seeds, small and delicate, I keep steeped in camphor water, the bottle being kept stoppered up for two hours with the seed in it. This is not only a protection against fungoid diseases, but it actually helps germination. Plants that do not ordinarily grow from seed, such as the mulberry, the Jerusalem artichoke, &c., can be easily grown from seed by this means. . . . . In the case of large seed, I do the pickling in the ordinary way, *i.e.*, I dip the seed in sulphate of copper solution (1 : 100) and immediately afterwards get it dried by a mixture of ashes, lime and rape dust. The pickling is done chiefly with the object of preventing mildews. Ashes, lime and rape dust are insecticidal manures. The drying is essential, as too long soaking of seeds in sulphate of copper 'burns' them up and in fact kills them outright."

We commend the above remarks to the serious consideration of our correspondents. One of the most annoying experiences of cultivators is the non-germination of seed from various causes. But both bluestone and camphor are cheap substances and obtainable at most bazaars (being know respectively by the native names of *palmanikkan* and *kapuru*), and it will be within the means of all to at least give these remedies a good trial, and if the trial prove successful, of adopting them into constant use.

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING JUNE, 1895.

1	·01	13	·83	25	·01
2	·01	14	1·86	26	Nil
3	·31	15	·10	27	Nil
4	·01	16	0	28	·05
5	·05	17	2·12	29	Nil
6	Nil	18	1·84	30	Nil
7	Nil	19	1·71	1	·13
8	Nil	20	·50		
9	·13	21	·12	Total	12·39
10	·08	22	·22		
11	·40	23	·24	Mean	·41
12	1·61	24	·05		

Greatest amount of rainfall in any 24 hours on the 17th instant, 2·12 inches.

Recorded by P. Van De Bona.

OCCASIONAL NOTES.

The present number commences the Seventh Volume of the Agricultural Magazine which was started in July 1889. Since that date it has been enlarged and we trust also improved. To our supporters to whom we owe so much in the past we offer our hearty thanks, and hope that they will continue their kind patronage in the future also.

We regret to find that a few copies of our last issue did not reach their destination owing to the loss of their wrappers. We shall be glad to supply the June number to those who will report to us the non-receipt of their copies.

Mangrove Bark.—The following is a concluding note on this subject, and should have completed the notes in our last issue:—*Kandelia Rheedii* belongs to the order Rhizophoraceæ. It is an evergreen shrub or small tree found on the shores of muddy creeks. The bark is used in Tavoy for dyeing red, but probably as a mordant. It is said to be employed in Cochin as a tanning material.

GRAPE CULTURE AT NASIK IN WESTERN INDIA.

Nasik, one of the most ancient sacred cities of the Hindus, is situated on the river Godavery near its source, to the north-east of Bombay. Its average rainfall is 35 inches, and its elevation about 1,900 feet above sea level. The climate is very salubrious and the soil fertile. Although its distance from Bombay is 120 miles by rail, its shortest distance from the sea is only about 60 miles; and it is reputed to have the double advantage of mountain breeze and sea breeze, the latter finding its way through the Peiet gorges. In the city and its vicinity are grown fine vegetables and excellent grapes.

Presuming that it will interest your readers to hear something of grape culture in this place, I shall give a brief account of one of the Grape Gardens there which I visited lately. Viticulture, as I saw it practised at Nasik, seemed to me a very simple affair. With the exception of the pruning and training, it resembled pretty

much the growing of any ordinary fruit tree. The expensive trellis work or "pandal" so inseparably connected with the culture of grapes in Jaffna and other parts of Ceylon, was absent; and the vines looked almost like bushes of 5 or 6 feet in height. There were 800 vines in one garden, planted two in each hole, thus making 400 pairs; and these were trained for support on to 400 trees of *Erythrina Indica*, a plant belonging to the natural order *Leguminosæ*, and well-known in Ceylon by the name of *Eramudu* in Sinhalese and *Mulmuruku* in Tamil. This tree, the gardeners say, is preculiarly suited for the purpose, as their growth close to the vines, so far from injuring the latter, seems to benefit them. Your readers will remember that this is one of those few trees that are held in high favour on the estates in Ceylon for growing as shade trees for Cacao plants. The nitrogen theory propounded with regard to plants of certain genera of the Leguminosæ order may probably account for this virtue in Erythrina trees. Besides, these plants have the advantage of being deep-feeders, sending their roots down into the subsoil and abstracting nourishment which is beyond the reach of the roots of the vine and many other cultivated plants. Further, judging from the nature of its wood and the very small amount of ash left behind after burning it, the Erythrina tree does not seem to require much mineral matter for its growth. Whether owing to these causes or any others, it is a fact confirmed by the experience of grape-growers in India that the Erythrina tree is admirably suited for training vines upon; and the advantage of this method of training consists not only in economy (the expenses of putting up pandals being saved), but also in the trees affording a certain amount of shade and shelter as protection against the excessive heat of the sun and violent winds at certain seasons of the year.

In the vineyard under notice, each pair of vines is planted six feet apart either way; but I should think 6 feet by 8 or 10 would be a better distance. The soil approaches a clay loam in nature and the land is pretty level. Although the vines are seven years old now, their main stems are not thicker than a man's thumb, thus showing that the growth of wood has not been unduly encouraged, which, I should think, is an important point to be kept in view in grape culture in the tropics:

The bushes bear two crops in the year, one season lasting from April to October, and the other from October to April; and so the plants are pruned about the end of April and October respectively. In pruning, only two buds or eyes of the shoots of the previous season are left. The vines began to yield a little when two years old, and ever since the crop has been increasing steadily.

The manure applied is old well-rotted night soil, which the gardener, who is a Hindu called "Municipal Manure." He uses twenty carts of it a year, *i.e.*, ten carts each season. He buys the manure at the nominal rate of four carts for a rupee.

As to watering: during the rainy season there is no need at all for any artificial irrigation, but in dry weather the vineyard is watered from wells once a week.

Another particular I elicited from the man is, that the only disease the vines are attacked with is mildew, which he called "White Disease"; and this they get very seldom, and as it does not do any serious damage, little notice is taken of it. As regards the longevity of the vine at Nasik, he said that vineyards planted when one is a little boy, last, if carefully managed, till he becomes an old man, thus assigning to them about fifty year's lease of life.

I have been taking some interest in grape culture, because I have an idea that it can be made a very paying concern when carried on on an extensive scale in the North and several other parts of Ceylon; and the Indian vineyard which I have here described, although not a very extensive one, is sufficiently large to give us some idea of grape culture on a fairly extensive scale, for it is worked on a system that can be applied to much larger acreages,—a fact that can hardly be said of the small grape gardens in Ceylon, though indeed they are good in their own way.

E. T. HOOLE.

P.S.—I shall on some future occasion send you a detailed statement as to the yield, expenditure, profit, &c.—E. T. H.

MARKS ON LIVE STOCK.

Certain marks, both artificial and natural, are met with in the bodies of our domestic animals. These we seldom notice, but they are often found to be of the greatest importance when such animals are intended for the market. The *artificial* marks which are very frequently, or one may say always found on the bodies of cattle in this island, are made by branding them with a hot pointed iron. Branding is generally done for the purpose of indicating ownership. The usual practice in villages is to have three letters branded on the side of the animal. These letters being the initial letters of the name of the village where the owner resides, that of his family, and his individual name. This system is very often useful in preventing cattle-lifting which unfortunately was very common at one time. The practice of forming as large characters as possible on the bodies of animals is not only unnecessary but causes a great deal of suffering to the animals. The branding of distinguishing marks necessitated under existing circumstances can hardly be put a stop to now, without revolutionizing a system that has existed so long, and that is believed to have proved useful: but there is nothing against modifying it and enforcing the necessity of making such distinguishing marks as small as possible, thereby reducing the area of irritation which the animal has to suffer. But there is another form of branding, a practice which is not only heartless, but extremely cruel and deserving of punishment. This is the use of the hot iron to make so-called ornamental lines upon the skin of a beast. These artistic designs often extend from one end of the body to the other, and are generally of a very complicated nature. Some carry on this practice quite thoughtlessly, without considering how unnecessary it is, and what an amount of suffering it causes the animal. There are others, however, who are foolish enough to believe that this mode of branding improves the

physique of the animals operated upon. The abuse of the branding iron deserves the attention of not only those who are interested in the prevention of cruelty to animals, but also of those who are concerned with the improvement of the breed of cattle in the country. Indeed, we ought to be able to criminally prosecute every man guilty of such wanton cruelty.

The *natural* marks found in the body of animals chiefly consist of coloured batches of white, black, &c., and hair-marks in the form of a feather, commonly known as *Suli* in Sinhalese. These latter marks are formed by hairs being arranged in a peculiar form on the surface of the skin. Animals having white patches on a single limb are supposed to be unlucky; but white patches on two similar limbs, either the fore or hind, go to recommend an animal. Again, three white legs or two whites taken diagonally are considered an unlucky arrangement. Four white legs and a white patch on the forehead go to form the best marks that an animal could possess and are known in India as *Panchkalyan* or the "five graces." As regards feather marks (*Sulis*), Arab horse owners consider two on the forehead in a line with the eyes to be lucky. One between the throat and the chest is considered to be of such great value that its occurrence makes every other unlucky mark that may be present of no consequence. The unlucky marks recognized among the Arabs are numerous, but the following are the principal: two marks on the forehead, one above the other, inclined to a side; one on the side of the neck; two on each side of the neck; one on the chest and one underneath the chest. There are some people who even go the length of attaching importance to hair marks on the body of man.

W. A. D. S.

LAWS OF CEYLON RELATING TO AGRICULTURE.

6. No appeal lies to any Court against the decision of any Council, Government Agent, or Inquirer, but the party aggrieved may petition the Governor after applying for relief in the first instance to the Government Agent. Application to the Government Agent for this purpose must be made by a written petition within 14 days exclusive of Sundays and public holidays from the date of the decision complained of. Application to the Governor must also be made by petition within 14 days exclusive of Sundays and public holidays from the date of communication of the Government Agent's order.

7. In default of payment of the penalty imposed by the President, Government Agent or Inquirer, the defaulter may be sentenced to undergo simple or rigorous imprisonment for a period not exceeding 14 days.

8. The Council or Government Agent or the Inquirer may direct that a portion of the penalty be paid to the person aggrieved by the act in respect of which the penalty was imposed. The acceptance of such sum by the person aggrieved debars him from sueing for the recovery of any damages sustained by him by reason of the act complained of.

CHAPTER VII.

Construction, Repair and Improvement of Irrigation Works.—In order to provide means for the construction, repair or improvement of works connected with the cultivation of paddy lands and to keep channels which supply water to such lands free from obstruction and in proper order, it shall be lawful for the Government Agent, at his own instance, or on the application of a reasonable number of proprietors to call a meeting of the proprietors to determine by a majority of the proprietors present either in person or by proxy in writing, whether it is expedient that such works be constructed, repaired or improved; and if so, whether or not Government aid is necessary for such work. If the majority present shall determine that such aid is not necessary, they shall proceed to determine the rate of subscription in money or of contribution in labour payable by each proprietor towards the work and their decision shall be recorded and shall be binding on all the proprietors whose lands are benefitted by such work.

If Government aid be deemed necessary, the Government Agent shall make application for such aid to the Provincial Irrigation Board. The application shall be accompanied by a specification showing the allotments likely to be benefited by such work and the names of the proprietors of the allotments. The Provincial Irrigation Board may, if it thinks fit, cause plans and estimates to be prepared.

3. If the estimate does not exceed R2,500, the Provincial Irrigation Board, with the sanction of the Central Board, may execute the work.

4. If the estimate exceeds R2,500, the Provincial Irrigation Board may refer the matter to the Central Irrigation Board, who may sanction the work. Such sanction shall be published in each village affected by the work by beat of tom-tom.

5. The costs of all works undertaken in any province shall be defrayed from, and shall not exceed, the portion of the irrigation fund apportioned to such province for that year.

6. In case of works the cost of which cannot be defrayed from the irrigation fund, application shall be made to the Governor in Executive Council by the Central Irrigation Board. The application must set forth the necessity for, and the probable cost of, such work together with a specification of the lands likely to be benefited thereby.

H. A. T.

(*To be continued.*)

THE MAUND.

The real value of the maund has often perplexed us in our perusal of Indian reports and periodicals. The word is hardly ever used in Ceylon except with reference to tea seed, in which connection the maund is understood to imply a weight 80 lbs. What is strange is that, seeing how variable the maund is, those who make use of the word do not indicate its value in terms of the standard pound avoirdupois so as to avoid misconception. In order to clear our doubts about the real value of the Indian measure, we lately consulted a competent authority (an agricultural officer of high standing in India) and are glad to be able to give our readers the benefit of the information with which we have been supplied. The following is our referee's reply to our query:—

The maund varies very much in weight in different parts of India. The Imperial maund has

a fixed weight, which is 40×80×180 grains troy (a rupee weighing 180 grains.) In Bengal in some districts it is a quarter more, and in some a quarter less, and it varies between the two extremes. But in the same locality one article may be measured by one standard and another by another standard. A *seer* ($\frac{1}{40}$ of a maund) of silk in Maldah weighs 82½ tolahs or rupee weights, but a seer of oil 95 tolahs, and a seer of vegetables 105 tolahs. In Bombay one maund = 28 lbs. avoirdupois = 1088$\frac{8}{9}$ tolahs: a seer being 27$\frac{2}{9}$ tolahs. But there is also a *pucca* seer in Bombay equivalent to 72·59 tolahs. At Poona a seer = 76·66 tolahs = 1·9714 lbs. avoir. = 2·33604 lbs. troy = ·9583 British Imperial seer. But 40 seers do not always make a maund in Poona. The *Kutcha* maund of Poona weighs 12½ or 14 Poona seers. At Satara, however, the seer weight is big. It is either 92·75 tolahs or 93·25 tolahs or 115 tolahs (at Mamdapur). In Sindh a maund=82¼ lbs. avoir. At Surat the seer = 35 Surat tolahs = ·455729 British seers. The Surat maund = 37½ to 38 lbs. avoir. At Broach the seer = 40 tolahs (not 80). The Madras maund = ·303819 British Imperial maund. One Bombay maund = 1·12 Madras maund. ("Now," says our correspondent, "you can make out how savage we are on this side the Strait.")

THE ACTUAL CAUTERY: ITS USE AND ABUSE.

The hot iron is used in Veterinary Surgery as a "counter-irritant' in diseased joints, tendons and ligaments, and to promote the absorption of bony deposits when they are just forming. It is generally applied at a red heat and acts by reflex action, amending deep-seated faulty nutrition and setting up a healthy reparative inflammation. It is a much severer irritant than a blister, and often removes pain very rapidly when repeated blisters have failed to do so.

There are three kinds of instruments commonly used in this operation, viz., (1) the wedge-shaped iron for linear firing, (2) the budding iron used in the case of small round circumscribed bony deposits, and (3) the pyro-puncture for parts covered with loose, thin skin such as the stifle joint; and the firing performed with these different instruments varies accordingly. The main principles involved in all three methods are, however, the same. The operation is done when the animal is strong enough to stand it and the weather fine. When all the four limbs have to be fired, which is very seldom the case, only one or two are treated at a time; and on no account should firing be done in a series of crossed lines close to each other, for the portions of the skin thus isolated will slough off beng deprived of their proper blood supply. It should be remembered that the actual cautery is an extreme measure, and is only resorted to as a last resource in very severe cases where milder remedies have failed or in cases of chronic lameness to which the latter are unsuitable. Formerly, even in European countries, it was a too common practice to fire the animals for very slight ailments, and even to adopt firing as a preventive to certain diseases. This was owing to the natural tendency of abusing a good thing without understanding its proper use as was also done in the case of blood-letting. It was currently believed that the part cauterized by the hot iron contracted and formed a sort of permanent bandage around the part, and thus helped to strengthen and brace it. But this idea is not quite correct. For a short time after the operation, the skin, no doubt, is tightened, as may be seen by its "drawn appearance"; but it soon resumes its natural elasticity and does not embrace the underlying parts more firmly than it does in its normal condition. The way in which firing actually exerts its curative influence is by reflex action as already mentioned. The benefit that follow its use is also partly due, in the case of overworked and illused animals, to the long rest which the owner is obliged to give the animal after it is fired.

While in the western world the abuse of the actual cautery is discountenanced and more or less discontinued under the light of Veterinary Science, in eastern countries such as India and Ceylon it is still continued to a great extent. Slight cases of lameness that can be cured by milder measures, and those that require internal treatment, such as tonics, and good nursing are treated in a reckless manner with the hot iron. This rough and ready method of treatment is also looked upon in certain quarters as a sort of panacea to the ailments and complications that sometimes accompany dentition in calves and dogs.

But such abuse is due more to ignorance than to wilful or wanton cruelty. The natives of India have great faith in the use of the hot iron. Instances are met with of their using it on their own bodies and those of their children as a preventive against certain diseases. It is, however, to be hoped in view of the efforts which are being made to spread scientific knowledge in India and Ceylon, that such ignorant practices will soon be things of the past.

The hot iron, besides being used for veterinary purposes, is also employed for branding cattle. Some native cattle-owners are satisfied with branding the animals with the initial letters of their names, while others make the process a complicated one by adding to them certain superstitious designs or drawings; and even the initials themselves are in some cases too many to be put on the poor animals, on account of the multiplicity of names possessed by some villagers.

In the *Ceylon Independent* of the 27th ultimo is found a graphic account of the cruel method of branding practised in certain villages. As though a single branding in this manner were not enough, cattle that have the bad luck to be stolen, not unfrequently receive a second branding at the hands of their new possessors, which is done in order to guard against identification of the animal and detection of the theft. But by far the worst cases are those in which no proper care is taken of the animals after branding, and the raw surfaces are allowed to fester and breed maggots and become big deep sores that take a long time to heal. The brand marks should never be excessive nor any deeper than is essentially necessary; and the wounds should be treated with carbolized margosa oil so as to keep out flies and prevent the evil effects of septic germs. Now that the Society for the

Prevention of Cruelty to Animals is up and doing in Colombo, I trust we may confidently look forward to some reform in this matter.

E. T. HOOLE.

BOMBAY, 9th May, 1895.

THE RHEA FIBRE PLANT.

The genus Boehmeria is represented in Ceylon by more than one species, *B. malabarica* (the Sinhalese Maha-diya-dul) being a recognised fibre plant common in Ceylon and used by the natives for making fishing lines. Regarding the genus, Dr. Watt says: "All the species of Boehmeria receive popularly the name of Rhea or grass cloth fibre plants, and, indeed, the bushy or herbaceous members of two or three other allied genera equally fall within that designation, since they all yield delicate, white, silvery and exceedingly strong fibres. It seems likely, however, that true Rhea fibre is the produce alone of *B. Nivea*."

A trial of the Rhea or Ramie fibre plant is now in progress at the School of Agriculture, Colombo, from cuttings imported from Calcutta. We also hear of an agency having been established in Colombo for a Rhea Fibre Company in England, and that already some gentlemen (in the interests of this Company we believe) have been prospecting for land of an extensive acreage in the Rayigam Korale. In view, therefore, of the local interest that has begun to be evinced in Rhea, we append a short account of the cultivation of the plant based on the article in Watt's Dictionary of Economic Products:—

Soil.—The rhea plant is exceedingly hardy, and thrives in almost any description of soil. But preference should be given to a rich, light, sandy loam, well worked and sufficiently shady. The subsoil should be good, as the roots penetrate 12 to 14 inches deep in search of nutrition.

Climate.—For profitable working, a situation should be chosen which would promote the quickest growth of the stems, and yield the greatest number of cuttings with the best quality of fibre. A situation fulfilling these conditions would most probably be found in a tropical climate with a moist atmosphere and fairly good rainfall. It would succeed in almost any part of the tropical plains of India.

Preparation of the Soil.—The land, if not naturally rich, should be manured: it should also be ploughed to a considerable depth, and tilled lightly so as to remove the weeds. Furrows or small trenches 3 feet apart should then be made, and the land kept ready to receive rhea roots or cuttings by the end of the rainy season. An analysis of rhea shows that the most favourable manure should contain nitrate of soda, sea-salt and lime.

Planting and Care of the Crop.—Rhea is easily propagated. It grows readily from root or stem cuttings and from seed. Supposing the mode of propagation by root-cuttings to be adopted, the young lateral shoots with their roots should be cut off and planted in furrows before the end of the rainy season, to a depth of 3 inches; a little watering may be necessary should the weather be dry.

It would be found that plants will grow rapidly to a height of 4 or 5 feet; that the roots will become stronger every year, the plant being perennial. The first crop may be ready in two months from the date of planting out, especially in favourable situations. There are many advantages in a rhea crop; it is perennial, and does not therefore require to be renewed every year. It resists variations in temperature owing to the roots penetrating into the subsoil. Year by year the roots spread, becoming stronger and more productive. The crop is never destroyed by caterpillars or other insects, owing to the quantity of tannin which the bark contains; and lastly, three or four cuttings may be taken off the same ground every year. But it has a serious advantage in that it is one of the most exhausting crops known, requiring the land to be left fallow before anything else can be put on the same field after the removal of the crop.

Cutting the Rhea.—Some experience is necessary to decide the right time for cutting. As a general rule, care should be taken to effect the cutting before the plant becomes covered with a hard or woody bark, the formation of which is indicated by the green skin turning brown, the discolaration commencing at the bottom of the stem. A practical way of finding whether the plant is ready for cutting is to pass the hand down the stems from top to bottom. If the leaves break off crisply, a crop of cuttings may be taken off the plants. Dr. Forbes Watson says that the plants are ready for cutting when 3½ to 4 ft. high. "If the length is not more than 2 feet, the fibre is very fine, but the chances are you get more waste, and not such a good percentage of fibre. In the long stems the fibre is not so fine as in the medium ones." Care should be taken, however, not to remove more than can be treated for extraction of the fibre within the 24 hours. "Experience," says Mr. Theo. Moerman, "has enabled us to establish the fact that the fibre of the second cutting is superior to the first, and that in every instance it is preferable to cut the stalks before the plant flowers and before it is completely mature in order to obtain a finer and softer fibre."

Outturn.—Dr. Forbes Watson says: "Estimates have been made shewing that you could get 40 tons per acre, but I think these require to be verified before we can accept them. Anyway, I do not think we can conclude for the present—I hope I shall be mistaken—that each crop will yield more than 250 lbs. per acre. You may, therefore, obtain 3 crops or even 4, in the year, which would bring it to 1000 lbs. per acre." But the outturn is variously estimated by different authorities quoted by Dr. Watt in his Dictionary of Economic Products. In a pamphlet on Ramie issued under the authority of the Department of Agriculture of Queensland, we read "under favourable circumstances an acre will produce 40 cwts., but 30 cwts. is regarded as an average crop."

POULTRY DISEASES.

If fowls are kept clean and well protected from wind and rain, and are not over-fed but given equal quantities of both soft and green food and a regular supply of pure water, they will not often get sick unless disease is introduced through infection or contagion. When a fowl contracts disease, it is best as a rule to kill it before it gets worse and communicate it to other birds of the flock. In cases of valuable animals attempts must necessarily be made to cure the disease.

Besides actual disease there are certain natural ailments, as they may be called, to which fowls are liable and which require treatment. These may be included under bad fledging, weakness, and cramp.

Bad fledging.—Chickens often suffer much whilst their feathers are growing especially in a chilly rainy weather. The breeds which feather, rapidly suffer much in this way (like the Shanghai) and this is perhaps the reason why the bantams which take long to fledge are so hardy. As soon as a brood appears drooping whilst the feathers grow, give some bread soaked in water, or if beer is easily procurable it is advisable to soak the bread in it; above all things keep them off from moist places. This ailment seldom or never lasts more than seven or eight days.

Weakness.—Highly-fed chickens which grows fast are generally subject to this. It arises through their fast growth and has to be remedied by giving animal food such as worms and bone dust. In warm weather dip the feet in cold water twice a day. The above disease should not be confounded with *cramp* which also disables the animals from walking and standing on his legs; for cramps cold water is highly injurious, the only treatment in such a case is warm fomentation and the application of turpentine to the legs.

ACTUAL DISEASE.

For actual disease it is deemed advisable to have well-sheltered and well-ventilated shed as an infirmary, which the healthy fowls should not be allowed to enter.

Gape is another troublesome infectious disease. The chief causes of this disease are foul water with decomposing vegetable matter, exposure to rain, and want of nutritious food.

Symptoms.—A number of worms are found in the wind pipe, jerky breathing, constant flow of saliva and offensive odours.

Treatment.—Camphor of the size of a grain of millet should be given with water. In well-marked cases the worms must be removed by introducing a loop of horse hair into the trachea. This should be repeated several times till the worms disappear; a feather stripped to the top may also be used to remove the worms.

A. M. FERNANDO.

(To be continued.)

MANUFACTURE OF SUPERPHOSPHATE.

It is advisable in the first instance to burn the bones and convert them into what is known as bone-ash, as fresh bones or bone-meal produce a slimy mass on treatment with acid which is exceedingly difficult to dry.

To prepare the superphosphate from bone-ash it is necessary to have a receptacle to mix the ingredients which is not attacked by sulphuric acid. A wooden trough lined with lead (a sheet of lead hammered to fit the trough) is about the best; but the wooden trough, pitched inside will answer the purpose, or a hole in the ground lined with cement. In this receptacle the ingredients are mixed in the following proportions:—For every 40 lbs. of bone-ash add 1 gallon of water and 15 lbs. strong sulphuric acid (commercial oil of vitirol.) Pour the whole of the water into the tank, then add *gradually*, stirring constantly with a wooden pole the sulphuric acid. The acid combines very violently with the water, and unless it be added as directed above, an explosion may result. Now add gradually, a little at a time, the bone-ash, stirring constantly with a stout pole or hoe. The above proportions should yield a mass possessing the consistence of stiff dough. If it is not stiff enough some more bone-ash may be added. Leave it to itself for a few hours, when it will dry to a friable mass, easily broken and in a fine state of division. Protect from rain when drying. The manure is now ready for use. Although burning the bones destroys the organic matter and diminishes the proportion of nitrogen, this loss is more than compensated for by the ease with which the product can be dried and handled. If fresh bones or bone-meal be used the fat which they contain prevents the complete action of the acid, and the resulting product is so slimy as to be unmanageable in many cases. If it is preferred to use fresh bones or meal, the following proportions are said to be the best:—

Dilute every half gallon of acid with one gallon of water, as directed above: that is, add the acid to the water, stirring all the time. Never on any account add water to the acid. Pour this diluted acid upon 20 lbs. of the bone-meal in the trough, taking care to pour slowly, stirring all the while. The sticky mass must now be mixed with loam, wood-ashes, peat, or gypsum, in order to dry it. Instead of burning the bones the oil may be removed by steaming them, but this is rather a troublesome process. Simple boiling with water is better than nothing, though in no case is the product so satisfactory as that prepared from burnt bones.

Instead of using acid, bones may be rendered soluble by allowing them to ferment. The following is a good plan:—

Dig a trench and fill it with alternate layers of wood-ashes and bones, beginning and ending with wood-ashes. Moisten each layer of ashes when laid, and keep the whole moist by watering from time to time. In a few months the heap may be turned over.

Bones are also dissolved by placing them in a pit and drenching with a hot solution of lye, 1 lb. of potash lye to every 4 lb. of bones. Cover with earth, and stir occasionally for two or three weeks, when the mixture may be turned out to dry.

It will be seen that treatment with acid is the most rapid, and the product just as satisfactory, but caution is required in mixing the ingredients.—*Agricultural Gazette, N.S.W.*

ASSIMILATION OF NITROGEN BY PAPILIONACEÆ.

It might almost be said that no discovery of modern times, in the field of biology, has given promise of being of greater or even equal value to that of Hellriegel. So long ago as 1876 Berthelot suggested that microbes in the soil very possibly exercised an influence on plants by enabling them to absorb nitrogen. This Hellriegel has demonstrated to be actually the case. He has shown that certain plants form on their roots minute tubercles within which advantageous microbes are, as it were, housed. This discovery has been confirmed by Wilforth as by Lawes and Gilbert and many other observers. It may be said not only to have revolutionized our knowledge of the

methods and materials of plant nourishment, but to have given a completely new turn to scientific agriculture. It has materially advanced the investigations into the subject of the preservation of soil fertility, and has given a rational explanation of the value of certain leguminous crops, in the rotation that for centuries has been an accepted maxim in most civilized countries.

Theodore de Saussure originally raised the question whether the nitrogen of the atmosphere has been utilized by plants in the formation of the nitrogenous materials of their structure. Boussingault demonstrated that this was not so, but that they derived their nitrogen through the roots, from compounds in the soil that contained that element. On this subject Prof. Julius Von Sachs *(Lectures on the Phisiology of Plants, translated by Prof. Marshall Ward, 1887)* says:—

"The view was once held that it was ammonia salts particularly which being absorbed by the roots of plants, or perhaps indeed by their leaves in the dew and rain water, yielded the nitrogen for the period compounds of the plant. But the result of our water-culture proves, in the first place, that plants are able at any rate to absorb the whole of their nitrogen in the form of compounds of nitric acid; but if, on the other hand, the attempt is made to replace the latter by ammonia salts, experimental difficulties make their appearance which we will not here discuss in detail. If, further, it is remembered that the ammonia produced in nature by the rotting and decomposition of organic remains, especially in vegetable soil, is easily transformed in the presence of potassium salts into compounds of nitric acid, which may be detected everywhere in vegetable soils and waters, and that nitric acid is contained in rain water, although in very small quantities, one comes to the conclusion that (apart, perhaps, from certain special cases and particularly apart from parasites and fungi) ordinary green plants obtain the nitrogen for the formation of their proteid substances, and therefore of their protoplasm, from salts of nitric acid."

Now, when a work published only the other day and by one of the greatest of botanists, affirms that plants obtain the whole of their nitrogen from compounds referable primarily to nitric acid, and when it has to be added that since the publication of that work it has been demonstrated that certain plants at least have the power, through the agency of microbes, to draw on the atmospheric supply of pure nitrogen, it will at once be apparent how great a revolution has been thereby effected in the theory of plant-life. And this is what has actually taken place within the past few years.

The well-ascertained fact that while peas, beans, and other papilionaceous plants develop a high percentage of nitrogenous material, the yield of that substance is not proportionately increased by the addition of nitrogenous manures to the soil on which they are grown, is at once explained. So also the further fact that on crops of that nature being removed from the soil, they leave it richer in nitrogenous matter than before cultivation. On the roots of such plants minute tubercles are formed. These, it has been ascertained, contain microbes which have the power of building up within their bodies the atmospheric nitrogen that has permeated through the soil. On the death and decomposition of these microbes the foster plant is supposed to utilize the nitrogen compounds thus formed, and the soil is presumed at the same time to be enriched, through the cultivation of plants which possess the valuable property of harbouring these minute parasites.—*Dr. George Watt.*

COMMON MORTAR.

(Continued.)

Coral, shells, and limestone are the substances generally used for the production of quicklime. The ordinary coral of the Jaffna Coasts forms a rather important article of trade, being taken in considerable quantities to the S.W. coast of the Island by the native crafts called *dhonies* at a trifling rate of freight, and there sold to lime burners: the product of the kilns being said to be more highly prized than that made from the limestone of the country, and second only to that made from marine shells. In the Central Province, where shells cannot be conveniently obtained, the rock of the limestone formations which crop out at various places is calcined.

In the production of mortar the quicklime obtained by burning carbonate of lime has to be slaked, and this is done by throwing water over it. In this operation a good deal of heat is given out.

Heat is generally an accompaniment of chemical action. In the human economy the oxidation of the carbonaceous matter in the blood gives rise to what is known as animal heat which is so essential for a healthy condition. The amount of heat given out during chemical action is an indication of the force with which chemical action takes place, and the stability of the compounds which result. The more heat given out in the formation of a compound, the harder is it to decompose that compound.

Quicklime in slaking falls into powder forming what is called slaked lime or slack lime, a compound of quick lime and water. The change is represented chemically by the following equation:—

$$CaO + H_2O = CaO,\ H_2O.$$

56 parts by weight of quicklime taking up 18 parts of water to form 74 parts of slaked lime or, to call it by its proper name, calcium hydrate. In the preparation of mortar it is important that *all* the quicklime should be thoroughly slaked, for a piece of unslaked lime in a wall, by combining with the vapour of water in the atmosphere after the mortar has been applied, is apt to expand and so spoil the smoothness of the wall. Quicklime has a great affinity for water, and, if left exposed for any length of time, will absorb atmospheric moisture and gradually become converted into slaked lime. Further, slaked lime has a tendency to revert to carbonate of lime, and if carbonic acid gas be available, it will exchange the water with which it is in combination for carbonic acid gas, and so become converted into carbonate of lime. The change may be expressed thus:—

$$CaO,\ H_2O,\ +\ Co_2 = CaO,\ Co_2\ H_2O.$$

Thus after slaked lime has been applied to the wall of a building (in conjunction with sand, in the form of mortar) it slowly parts with its combined water, and takes up carbonic acid gas from the atmosphere, where, as has already been pointed out, it exists in comparatively large quantities. A newly-plastered room may remain damp for a considerable time, for after the water which goes

to dissolve the slaked lime and mix it with the sand has been evaporated, the water of combination has gradually to be given up, and the slaked lime become converted into carbonate of lime. It is sometimes found even in old walls that the internal plaster contains slaked lime in the unaltered condition.

It may be said that water acts in three ways in relation to lime, (1) it combines chemically with it to form the hydrate of lime, which we have agreed to call slaked lime, and (2) it partially dissolves this slaked lime, so forming what is commonly known as limewater—a solution of slaked lime in water, and (3) it acts as a medium, a mechanical medium we may say, for mixing slaked lime and sand.

Carbonate of lime is insoluble in pure water, but is soluble in water having carbonic acid gas in solution ; this can be easily proved. If we take some lime water, prepared by dissolving slaked lime in water, and breathe into this solution, we pass into it carbonic acid gas, which is contained in our expired breath. I cannot here say more in explanation of how this gas comes to be found in our breath, than merely mention that it results from the oxidation in the lungs of the waste carbonaceous materials found in the blood. Well, by breathing into this solution the carbonic acid gas combines with the quicklime part of the disolved slaked lime and so forms carbonate of lime. The change is similar to that which I stated took place in the hardening of mortar, namely, the conversion of slaked lime into carbonate of lime, by the combination of quicklime with the carbonic acid gas in the atmosphere Both changes are representable by the same chemical equation

$$CaO,\ H_2O + CO_2 = CaO,\ CO_2 + HO_2.$$

Now you will observe that the liquid turns milky, the reason of this being that particles of carbonate of lime which has been formed are in suspension in the water, since carbonate of lime is insoluble in water. If, however, we continue to supply carbonic acid gas to this mechanical mixture of carborate of lime and water, we shall find that the liquid again becomes colourless, owing to the fact that carbonate of lime is soluble in water which contains carbonic acid gas in solution.

(*To be continued.*)

CEYLON WOODS.

The timber trees of Ceylon have been ably dealt with by the late Mr. William Ferguson, and his pamphlet on the subject has served as a useful handbook to the students of plant-life in Ceylon, but we venture to think that the following list of the trees of our forests which are of economic value will prove of interest to our readers, especially as specimens of the wood from these trees can be seen at the School of Agriculture. The collection was made by the Conservator of Forests himself who, with the permission of Government, presented it to the School Museum. The numbers in italics indicate the numbers of the orders in Dr. Trimen's list of Ceylon Plants. those within brackets being the numbers of the specimens themselves. The Sinhalese names, where known, are also given :—

2 Dilleniaceæ.
(1) Wormia triquetra. Diapara.
(2) Dillenia retusa. Godapara.
3 Magnoliaceæ.
(3) Michelia glauca. Wal-sapu, Wal-buruta.
(4) Michelia champaca. Sapu (Champak).
4 Anonaceæ.
(5) Cyathocalyx zeylanicus, Kekala, Ipetta.
(6) Polyalthia coffeoides.
(7) Xylopia parviflora. Netawu.
9 Capparideæ.
(8) Cratacva Roxburghii. Lunuwarana.
11 Bixineæ.
(9) Scolopia crenata. Katukurundu, Katukenda.
(10) Trichadenia zeylanica. Titta-gas, Tolol.
(11) Hydnocarpus venenata. Makulu.
19 Guttiferæ.
(12) Garcinia echonicarpa. Madol.
(13) ,, spicata. Ela-gokatu.
(14) Calophyllum spectabile. Domba-kina.
(15) ,, Burmanni. Guru-kina.
(16) ,, Inophyllum Domba.
(17) ,, tomentosum. Kina.
(18) ,, bracteatum. Walu-kina.
(19) Mesua ferrea.—Na (iron wood).
20 Ternstrœmiaceæ.
(20) Ternstrœmia emarginata.
(21) Adinandra lasiopetala.
(22) Gordonia zeylanica.
21 Dipterocarpaceæ.
(23) Dipterocarpus zeylanicus. Hora.
(24) Vatica Roxburghiana. Mendora.
(25) ,, affinis.
(26) ,, obscura.
(27) Shorea lissophylla.
(28) Hopea discolor.
(29) ,, cordifolia.
(30) Doona trapezifolia. Yaka-halu.
(31) ,, gardneri.
(32) ,, macrophylla. Honda-heraliya.
(33) ,, ovalifolia.
(34) Vateria acuminata. Hal
(35) Stemonoporus sp.
22 Malvaceæ.
(36) Thespesia populnea. Suriya (tulip tree.)
(37) Bombax malabaricum. Katu-imbul (red cotton tree).
(38) Cullenia excelsa. Katu-boda. (Wild durian.)
23 Sterculiaceæ.
(39) Sterculia fœtida. Telambu.
(40) Pterospermum suberifolium. Velanga.
24 Tiliaceæ.
(41) Pityranthe verrucosa.
(42) Berrya ammonilla. Hal-milla (Trincomalee wood).
(43) Grewia orientalis.
(44) ,, tiliæfolia. Daminiya.
(45) Elæcarpus serratus. Weralu (wild olive).
(46) Elæocarpus amœnus.
(47) ,, subvillosus. Gal-weralu.
(48) ,, zeylanicus.
(49) ,, glandulifer.
29 Rutaceæ.
(50) Acronychia laurifolia. Ankenda.
(51) Atalantia monophylla.
(52) ,, zeylanica. Yakinaran.
(53) ,, missionis. Pamburu.
(54) Feronia elephantum. Diwul (wood apple).
(55) Citrus aurantium. Dodan, (orange).
30 Simarubaceæ.
(56) Ailantus malabarica. Kumbalu, Wal-bilin.
32 Burseraceæ.
(57) Canarium zeylanicum. Kekuna.
(58) Filicium decipiens. Pehimbiya.
33 Meliaceæ.
(59) Azadirachta indica. Kohomba.
(60) Melia dubia. Lunu-midella.
(61) Walsura piscidia. Kiri-kon.
(62) Chickrassia tabularis. Hulan-hik.
(63) Chloroxylon swietenia. Buruta (Satinwood).

35 Olacineæ.
(64) Lasianthera apicalis. Urukann.
36 Ilicineæ.
(65) Ilex wightiana. Andun-wena.
37 Celastraceæ.
(66) Pleurostylia Wightii. Piyari.
(67) Celastrus paniculatus. Duhudu.
(68) Elæodendrum glaucum. Neralu.
(69) Salacia prinoides. Hin-himbutu-wel.
38 Rhamnaceæ.
(70) Zizyphus jujuba. Maha-debara. Masan.
40 Sapindaceæ.
(71) Hemigyrosa canescens.
(72) Schleichera trijuga. Kon (Ceylon oak).
(73) Sapindus laurifolius. Kaha-penela.
(74) Nephelium longona. Mora.
42 Anacardiaceæ.
(75) Mangifera indica. Amba (Mango).
(76) ,, zeylanica. Amba, walamba (wild mango).
(77) Odina woodier Hik
(78) Semecarpus gardneri. Badulla.
(79) Campnosperma zeylanicum. Aridda.
(80) Spondias mangifera. Embarella (Hog plum).

(To be continued.)

GENERAL ITEMS.

There are three species of Sansevieria to which the name bowstring hemp is usually given, though there are a dozen species in the genus. The three species are *S. guineensis*, *S. zeylanica*, and *S. latifolia*, the first-named being known as African bowstring hemp. *S. zeylanica* is the best known, however, and is common in Ceylon from which it takes its name. Among the Sinhalese it is known as *Niyanda*, while the Tamils call it *Maral*. A report (No. 5. Fibre Investigations) issued by the United States Department of Agriculture includes an interesting summary of information regarding bowstring hemp, by Dr. Dodge, the fibre specialist. As a result of an exhaustive enquiry into the subject, the cultivation of Sansevieria would appear to be a most desirable and profitable industry, as the plant possesses advantages which should recommend it to the intending fibre-grower, perhaps better than any other fibre-yielding plant. The plant is very easily propagated, quick of growth, the fibre is of the best quality—fine, white, lustrous and strong—and realizes high prices. Forty to fifty pounds of fibre is said to be got from one ton of leaves. According to Dr. Roxburgh's estimate about $1\frac{1}{2}$ tons of fibre could be calculated on per acre per annum with two harvestings in the year.

It is certainly annoying to see a service-bull expending his energy in pawing up the ground and other destructive work. The Editor of the *Agricultural Journal* of Cape Town, referring to the question of working stud-bulls for carting or ploughing purposes, says. "Usefulness on the farm was not the only advantage of this employment of the bull, but it kept him most quiet and docile—a matter of considerable importance—as these high-bred animals are apt to become very surly and even dangerous as they get older . . . . Exercise will aid in keeping a worked bull healthy and in no way detract from his value as a sire."

It is said that canaigre, the new tanning materials from *Rumex hymenosepalus*, is expected to enter largely into arts and industries other than leather-making. In the manufacture of dye-stuffs and mordants it is said to be very valuable, and high hopes are entertained of carnaigre becoming an important article in American agriculture.

The Editor of the *Cape Agricultural Journal* answers the question—"Which is the most effective way of destroying ants in a garden" as follows: Arsenic and sugar is a most effective poison for getting rid of ants. The sugar and arsenic must be finely pounded and then moistened and laid about in small quantities where the ants are.